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ORIGINAL COMMUNICATIONS.

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THE ANATOMY, PSYCHOLOGY, DIAGNOSIS AND TREATMENT OF CONGENITAL MALFORMATION AND ABSENCE OF THE EAR.*

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At a previous meeting of this Association I presented a number of cases of congenital deficiencies of the ears. with respect to the technical side of operative procedure of reconstruction. Today, I desire to present for your consideration some of the same cases from the standpoint of their physiology, functional tests, radiologic study and particularly the psychology and psychiatry associated with them.

It was only during the long and tedious work of this reconstruction that I noted certain phenomena as regards the psychology and psychiatry which seemed to differ from the normal or deafened individual and which led me to this study. In order that I might have some definite and fundamental knowledge on this subject, I consulted the literature, so far as textbooks and periodicals of the past twenty years were concerned and found the reference, particularly in the English or American language, so sparse as to be negligible. Schwartze, in his "Handbuch über Entwicklungsstörungen des Gehörorgans" (Textbook on "The Disturbances of the Development of the Ear"), makes some slight references to the question of mental deficiencies in cases of congenital ear deficiencies. Alexander and Moskowski, in the Archives für Ohrenheildkunde, 1910, report on the hearing of some of these cases. In 1921, Alexander and Benesi, in the Monatschrift für Ohrenheildkunde, reported more

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fully on the functional tests, while Benesi, in the same number, has an article with more confirmatory work on ear deficiencies of congenital origin. Marx in Schwalbe's "Handbuch der Missbildungen des Gehör-organs", goes into detail on this subject. One of the latest contributions to this subject is that of Samuel Michel in the Monatschrift für Ohrenheildkunde, 1925, in which he describes a case from the angle of diagnosis, including X-ray examinations and functional tests, the latter being carried out with the greatest of accuracy and practical application. He calls attention to the presence of facial paresis and partial facial hemiatrophy so often associted in these cases. He further calls attention to this finding that in most cases the malformation or absence of the ear occurs on the right side, for which he offers a theoretical explanation, namely: the position of the head in utero. In following the history of alcoholism in the parents, he finds constant positivism. In his case wherein there was a spontaneous nystagmus present, the only one on record, the nystagmus was peculiar in that it was oblique. In the same number of this journal, among the transactions of the Austrian Otological Society, Karl Heidt reports a similar case. I then consulted a number of psychiatrists from whom, with the exception of one, I received very little encouragement or enlightenment. This exception was Dr. Herman Adler, Director of the Institute of Juvenile Research of Chicago, who was so kind as to interest himself considerably and studied these cases with me.

The psychological examinations, which were carried out under his supervision by his well-trained assistants, showed us conclusively that the attempt to perfect the deficient and deformed ears had a decided effect on the makeup of the individual. The psychiatric examinations verified still more our assumption that from a useless, timid person with all types of inferiority complexes, a happy personality resulted. In order to avoid repetition, I shall show these findings in connection with each case on the screen. My observations of the parents of these patients have also been very significant. All of us are familiar with the depression that is noted in the parents when their child is born with some deformity or defect, particularly about the head. This feeling of depression is most acute the first few days after the child is born and though they gradually become more or less reconciled to it. they never "get over it". Of course the parents are always expecting perfection, or at least a near approach to the opposite, normally developed ear. While such result is not likely to be obtained, at least I have never been able to accomplish it, I have yet to see an instance where there was not a

marked change for the better in the mental attitude of these individuals after attempt at correction is begun. Certainly there has never been an instance in my experience where I have met with reproach or lack of gratitude for my attempts to do something for their child.

Physical examinations: These are of extreme importance, especially in connection with the surgical requirements, since several of the cases showed congenital deficiencies or weakness in other organs of the body, as will be illustrated by the case reported post-mortem of the persistent foramen ovale. Of greatest importance, however, is the condition of the lungs and kidney function. Several of our cases developed a mild but protracted nephritis following each operation so that in one case, at least, it became necessary to desist from further operative work for the time being. In older individuals this difficulty is not so significant owing to the possibility of operating under local or synergistic analgesia.

The anatomical study of these ears is divided into consideration of the following: *a,* the external ear; *b,* middle ear; *c,* mastoid; *d,* internal ear; *e,* neighboring structures. *The external ear* may be wanting almost entirely, including a complete obliteration of the external canal, or there may be only a slight defect in the pinna or a membranous obstruction of the canal. All possible degrees and varieties of deformity or deficiency may exist between the above two extremes. In the majority of cases, there is a fair amount of tissue present, although it is so dwarfed and misshapen as to lack all resemblance to an ear. In several of my cases, wherein the one ear was small and deformed, the other, otherwise normal ear had from one to four cartilaginous protuberances in the region of the trague, often spoken of as poliotia or accessory ears, although they have no resemblance to an ear. As to the presence of *the middle ear* in these cases, one can only try to determine that fact by catheter inflation and the X-ray of a bougie in place. Being aware of the possible danger of carrying in an infection by such procedure, there being no outlet, such as the external canal, I only inflated and bougienaged one such ear, which I did with the greatest care and gentleness. While inflating, I listened, by means of an ordinary stethoscope, placing the bell end over the tragal region, and was satisfied that air was reaching the middle ear. After that I passed a radio-opaque bougie and took an X-ray picture which showed its presence at a greater length than the Eustachian tube (Fig. 1).

Very interesting were the studies of the *radiograms* of these ears, especially the mastoid process in connection with the hearing. I

have reference to the degree of pneumatization. While it is accepted that, in general, the pneumatization of a mastoid process has little or nothing to do with the hearing, I have found that this does not prevail in these patients. I shall show in the illustration that in cases wherein the congenital deformity of the external ears was associated with a nonfunctionating labyrinth, there was not the least evidence of a mastoid cell and the internal auditory meatus was not outlined. Conversely, in these cases of deformed ears, wherein the hearing was very fair, the pneumatization was marked. In one of the cases, there was an apparent absence of the mastoid cells in the normally developed, good-hearing ear, but the history, as well as the otoscopic examination, revealed that the patient had a protracted case of suppurative otitis media in that ear following measles. In the radiograms of infants, one can, as a rule, make out the bony labyrinth simply because it is one of the earliest calcified structures in the head. Therefore, in the radiologic study of infants with congenitally deformed ears, especially when the deformity is unilateral, one will note the absence of deficiency of the outline of the semi-circular canals as well as the cochlea, as compared with its presence in the opposite ear. In older children and adults, this radiologic finding of the internal ear is not of much value because the compact bony tissue does not permit the recognition of the bony labyrinth. In the anatomical examination of one of my cases after death, the findings were so instructive and interesting that I desire to place them on record, herein, in some detail.

Baby B., age 1½ years, born at a little over a seven months' term with one rudimentary ear. It was not a very strong baby and appeared to have some difficulty with circulation, although no heart lesion was made out. There were no X-ray pictures taken, this case having been one of the earliest that came under my care. Operation, which was done under chloroform anesthesia, consisted in the primary loosening up of the parts about the ear and the formation of a primitive pinna. There was an uneventful recovery from the operation and the child, as well as the wound, was doing nicely. Three weeks after operation, the baby began to fail. It was during the summer months and the little patient developed a summer complaint which terminated fatally within four days. Permission for a post-mortem was obtained. After the removal of the calvarium and the brain, which were normal, I found that the internal auditory meatus of the right (defective) side was very small as compared with the opposite side. There was, however, a nerve with the canal. Whether it was the facial, alone, or some part of the

auditory, I could not say. I was not able to trace any part of the auditory portion to the brain as I was easily able to do on the left side. Chiseling upon the region of the attic of the middle ear, there was no discernible. Neither was there evidence of a cochlea but there were vestiges of two of the semicircular canals. No mastoid cells were found. On the left (normal) side, there was a good size middle ear and antrum but no mastoid cells. However, the internal ear was normally developed. In the general post-mortem, I found that the heart had a persistent opening between the two auricles (foramen ovale). The gastro intestinal tract was that of an acute inflammatory process without peritonitis. The lungs and the remainder of the viscera were quite normal.

Functional tests: To determine the hearing in such a congenitally deformed ear, and it was principally a quantitative determination that I was after, I employed the noise apparatus as well as the Gellé procedure in the normal ear. I found that the Gellé gave the best results because the noise from the apparatus was carried over to the ear tested. The result of these as well as the vestibular tests will be in the illustrations (lantern slides) with each case. To test the vestibular apparatus in the defective ear, I was forced to depend upon the rotation of the patient and the galvanic current since the caloric experiment could not be employed. However, I tried the recently recommended .....a..... heat test by means of the diathermic current and the Barany experiment of chilling the region of the ear by means of ice packs, but obtained no response from either test.

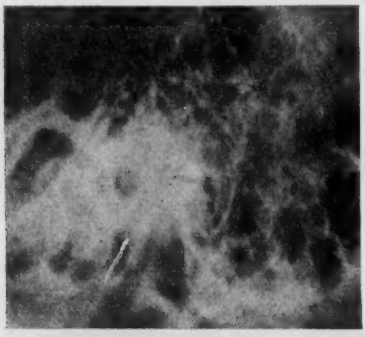
Conclusions are that: *1*, Contrary to the common but unjustified opinion of many men is the usefulness of an operative procedure in these cases, particularly on the mind of the individual as well as the parents; *2*, the radiologic findings would suggest the possibility of further investigating pneumatization in connection with the function of hearing. In the determination of the function of these ears, both of the cochlea and vestibular apparatus, one has a splendid opportunity of comparing a markedly deficient ear with one of normalcy which does not prevail in testing congenitally deaf and mute children or otherwise deafened individuals; *3*, while anatomically and cosmetically perfect results are rarely obtained, improvement is surely demonstrable; *4*, the work on this subject would not be considered finished until the embryology has been investigated and the histological examination of such a congenitally deficient ear, particularly the labyrinth, is made. It is most unfortunate that in the case I had, I did not complete this examination.

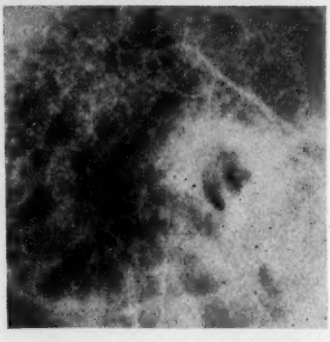
Examination: Right ear: Marked deficiency of pinna. Lobule fairly developed. Absence of tragus. External auditory canal completely blocked. Mastoid process well outlined.

Left ear: Normally developed, with presence of four accessory cartilaginous tubercles.

X-ray: Right: Large pneumatized mastoid. Bony part of middle ear clearly outlined, though hazy, due to presence of membranous obstruction. Glenoid fossa and condyloid process normal.

Left: Large pneumatized mastoid. Clearly outlined external auditory canal. Glenoid fossa and condyloid process normal.





Functional tests: C. V.: right, 3 to 10 feet; left, normal. W. V.: right, contact; left, normal.

Gelle test: 3 to 5 feet (noise apparatus in left ear). Monochord heard on both sides, though somewhat less distinct on right. Tuning forks, g^1 to c^4, all heard indistinct, as compared to left, which are heard.

Weber test: Lateralizes to the right.

Turning tests:

Canal	Direction		Time	Nystagmus	Duration
1. Horizontal	R.	L.	10 X in 17 sec.	Horizontal to left	18 sec.
(Head forward)	L.	R.	10 X in 19 sec.	Horizontal to right	16 sec.
2. Vertical	R.	L.	10 X in 20 sec.	Rotary to left	16 sec.
(Head back)	L.	R.	10 X in 20 sec.	Rotary to right	12 sec.
3. External	R.	L.	10 X in 20 sec.	Vertical down	19 sec.
(R.E. to shoulder)	L.	R.	10 X in 20 sec.	Vertical up	12 sec.
(L.E. to shoulder)	R.	L.	10 X in 20 sec.	Vertical up	15 sec.
	L.	R.	10 X in 20 sec.	Vertical down	15 sec.

Past pointing: After turning normal response on both ears.

Falling test: Normal response after turning, though somewhat slow on right.

Galvanic electric current and diathermia caloric: Intolerable. Negative.

Hot and cold water: Normal response on left.

Barany's chilling test: Negative on both sides.

Physical examination: Negative in every particular.

Psychological and psychiatric examination: The intelligence test disclosed that the patient has a mental age of 15 years, 9 months, which with his chronological age of 21 years, 10 months, gives him an intelligence quotient of .96, indicating adequate intelligence.

He has very good ideational memory, and thus is able to remember a passage which contains a consecutive train of thought. He would be able to listen to a lecture, organize the material presented in his mind, and carry away a fairly adequate summary of what he had heard; therefore, although his intelligence is only adequate he might make a fairly good record in school or college. This test was the only one he passed in year XVIII. Among other things this means also that he is better developed on the perceptive side than would be indicated by his general intellectual level. This point might have a bearing on his adjustment to the handicap because he would be keen in his perception, but being rather inadequate on the motor side he might find it difficult to adjust. Contrasted to this is his low score in rote memory, for unassociated facts, such as dates and single items of information, he will have to resort to a notebook or stimulation from another person rather constantly.

Apparently this boy has made very good adjustment to his difficulty. He gives an account of great shyness and great difficulty in meeting people, especially girls, when he was younger. He seems quite complacent and denies any feeling of inferiority or any other incorrect adjustment to his physical deformity. Nevertheless, in his history there is some indication that the adjustment still requires a certain amount of effort. It is probably because his intelligence is only average and because he has naturally a rather placid disposition that the deformity has not caused any greater emotional disturbance. His emotional makeup seems to be rather uncomplicated and therefore he is likely to escape the undue strain such a deformity usually throws upon a more complex and sensitive nature which usually accompanies a superior intelligence. It is not likely, therefore, that this young man will suffer from a psychoneurotic manifestation, which is a point of considerable interest to the surgeon, in that he can be sure that the maximum effect of adjustment possible can be obtained in such a case as this.

Summary:

1. Psychological and psychiatric findings demonstrate the rationale, in the attempt of cosmetic effect on the deficient ear.

2. Cosmetic result obtained warrants the effort.

3. No ulterior effect from 21 operative procedures—18 being performed under synergistic analgesia.

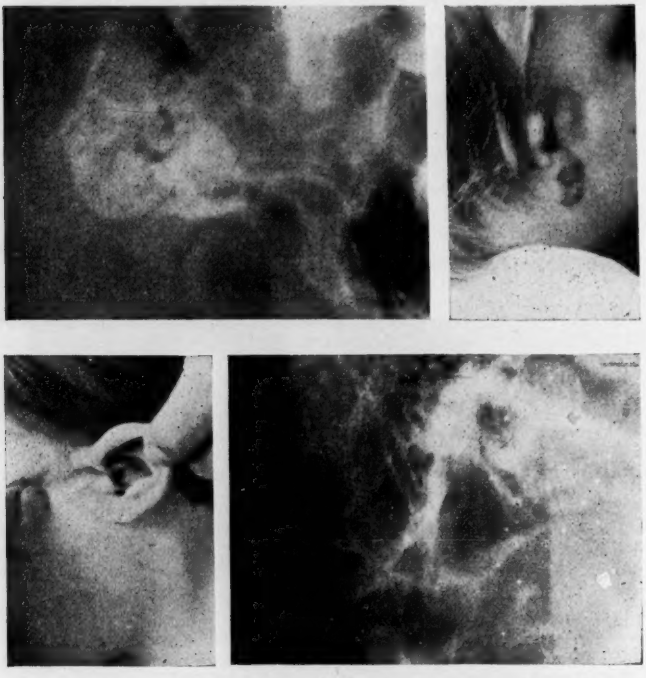
4. Absence of luetic or alcoholic history in family. Negative Wassermann test.

Examination: Right ear: Deficiency of greater portion of pinna, small rim of cartilage of Helix and a knob of a lobule present. No evidence of external auditory canal. Region of the tragus is a semicircular depression.

Left ear: Fully developed pinna. Meatus closed by membranous diaphragm, small pit below same. Presence of two accessory nodules in front of ear.

X-ray: Right: Mastoid conglomerated solid bony mass with marked changes in glenoid fossa and condyle of lower jaw. No evidence of bony labyrinth.

Left: Mastoid process large, well pneumatized. External auditory canal clearly outlined. Normal configurement of internal auditory meatus. Ramus of mandible and condyle normal.



Functional tests: Noise apparatus placed over left ear, patient absolutely deaf. Palm of hands applied over both external ears, conversational voice heard at 30 feet plus.

Tuning forks (g^1 to c^4): *Right:* negative. *Left:* All, normal time.

Monochord: High tones perceived on *right.* All tones heard clearly on *left.*

Weber: Lateralizes to the left.

Turning: *Right* to *left:* Nystagmus to left lasting 15 to 18 seconds. *Left* to *right:* Nystagmus to left.

Past pointing: Normal response after turning, in both directions.

Falling test: Normal response after turning.

Galvanic electrical current: Refused permission on account of pain.

Physical examination: Made by pediatrician showed mild degree of chronic nephritis with acute exacerbation following each etherization.

Rhinological examination: Tonsils and adenoid disease. T. and A. operation.

Psychological and psychiatric examination: The mental examination revealed the following: Chronological age 8 years, 4 months; mental age 9 years, 9 months. Intelligence quotient, 1.17. This rating indicates superior intelligence.

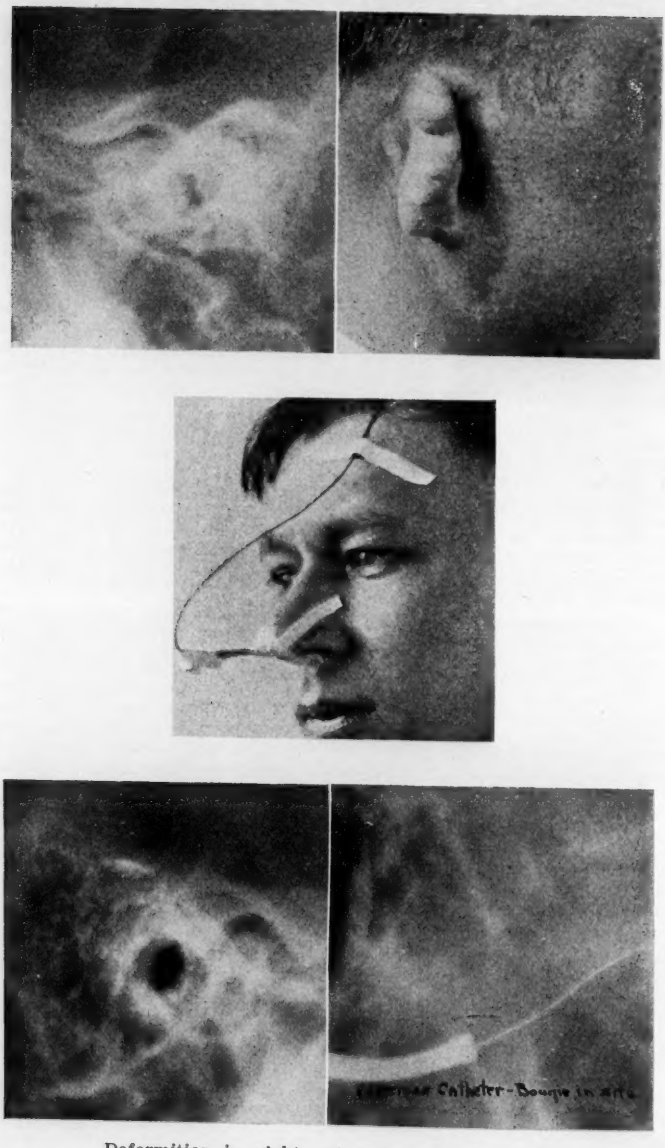
During the examination the boy exhibited great restlessness, moving about a good deal, opening and shutting drawers of the table, and interrupting the examination procedure with such remarks as: "Now I won't have time to practice my piano lesson. I like to practice. If I don't practice I can't play good." There was marked attention defect. Experience has shown that an attention defect of this sort with marked motor restlessness invariably indicates some physical pathology. The fact that the child has superior intelligence would rather increase the disturbance consequent upon the physical deformity. In spite of the boy's ability, however, he was not doing well in school.

Two obvious inferences follow from this: In the first place the physical deformity should be relieved as much as possible. The ideal thing, of course, would be to remove this entirely, but this is rarely ever possible. The effect of surgical correction here is two-fold: In the first place it will give the child some relief from his inferiority reactions. If the ear can be restored to such an extent that it does not call itself instantly and insistently to the attention of others, the child may adjust to it as a peculiarity merely, rather than a deformity disturbing to others. In the second place, the child may be given hope so that he will feel that the disability is a temporary one, which is on the road to correction.

In addition to the surgical procedure the education and training efforts should be made in the following directions: First, special training similar to the methods of oral education of the deaf, with the object of developing the motor reactions and thus stimulating the use of the intelligence which the boy possesses. Second, musical training, which will also give some emphasis to his motor expression and at the same time give him the encouragement of engaging in an activity for which he has talent, since this particular boy has musical talent. Third, supervision of recreation and of spare time, which should stimulate the boy's imagination and interests in activities which he can carry out with companions of his own age. This would also help to remove some of the inferiority reactions based on his recognition of his deformity. Under such treatment the restlessness and attention defect can be corrected and the boy can be given a great assurance, so that he will learn to bear the handicap, even though surgery may not completely remove all traces of his deformity.

Summary: The musical talent in this child being phenomenal in the playing of the piano and violin, in his being able to play some of the most difficult music and composing some of his own, therefore places the value of his left ear so high, such as to guard one in attempting to perform any surgical intervention on the existing diaphragm and obstructed canal. However, one can anticipate possible disaster in the event of an infection to the middle ear occurring.

The mental improvement in the child as well as the change in the attitude on the part of the parents towards the child can be scarcely appreciated without having been personally acquainted with these individuals.



Deformities in right external ear and canal.

Examination: Right ear: Fair remains of upper part of pinna. Absence of tragus and lobule. External auditory canal completely obliterated.

Left ear: Normally developed.

X-ray: Right: Middle ear hazy. No evidence of any mastoid cells. Extreme density in region of canals. Glenoid fossa and condyle normal.

Left: Middle and external ear clearly outlined. Mastoid well pneumatized, small cells. Glenoid fossa and condyle normal.

Functional tests: Loud C. V., right, almost contact; left, normal. C.V., right, not heard; left, normal. W. V., right, not heard; left, normal.

Gelle test: Almost contact (noise apparatus in left ear).

Tuning forks (g^1 to c^4) Right, negative; left, normal.

Monochord: Appears to perceive high tones on right.

Turning test:

Canal	Direction	Time	Nystagmus	Duration
1. Horizontal	R. L.	10 X in 22 sec.	Horizontal to left	8 sec.
(Head forward)	L. R.	10 X in 22 sec.	Horizontal to right	10 sec.
2. Vertical	R. L.	10 X in 20 sec.	Rotary to left	12 sec.
(Head back)	L. R.	10 X in 20 sec.	Rotary to right	12 sec.
3. External	R. L.	10 X in 18 sec.	Vertical down	15 sec.
(R.E. to shoulder)	L. R.	10 X in 21 sec.	Vertical up	16 sec.
(L.E. to shoulder)	R. L.	10 X in 20 sec.	Vertical up	15 sec.
	L. R	10 X in 20 sec.	Vertical down	22 sec.

Weber test: Does not lateralize.

Galvanic electric current: Intolerable. Negative.

Diathermia caloric: Intolerable. Negative.

Hot and cold water: Normal response on left.

Barany's chilling test: Negative on both sides.

Physical examination: Negative in every particular.

Psychological and psychiatric examination: The intelligence test disclosed that the patient has a mental age of 16 years, 4 months, which with his chronological age, 24 years, 9 months, gives him an intelligence quotient of 1.02. Indicating adequate intelligence.

He was rather better than average in rote memory and ideational memory. This means that he is able to utilize in his thinking not only more or less complicated logical sequences, but also isolated facts, and he should be able to retain these even though they are not associated with other facts. He has an innate capacity for correct observations and should be able to use such observations, either connected or isolated, in his thinking. He shows rather better than average ability in tests requiring ingenuity and some practical application of his perceptions. There was nothing to indicate any pathological disturbance.

The psychiatric examination disclosed some evidence of a definite compensation for his physical deformity, notably in his scrupulous attention to his personal appearance. He was not, however, overdressed. This and all the other general reactions of the patient, indicate the attention he pays in putting his best foot forward and at the same time being as inconspicuous as possible, avoiding attracting attention to himself. His history shows that he has reached a better state of adjustment than has existed previously and he himself is aware of this. Through his earlier years he struggled against his deformity by being seclusive, keeping away from others, was very shy and self-conscious in the presence of others, especially his school mates. The boy tells that he became interested in what plastic surgery could do for him through reading a book about it and that he resolved that he would take advantage of the first opportunity that occurred to gain relief from his deformity. It is obvious that this boy has suffered considerably from this and that he has made a more or

less conscious and continuous effort at adjustment. If plastic surgery can and even partially correct his trouble it will relieve him of a heavy burden and make it easier for him to bear whatever permanent deformity remains. It is a well established observation in psychopathology that persons of this sort may very well be continuously at the limit of their strength and that if any additional handicap is placed upon them, such as is unescapable in daily life, they may go over into a psychoneurosis. By increasing the margin of safety through reduction of the physical deformity and the strain it is upon his adjusting mechanism, such a danger would be either removed or at least made less imminent.

Summary:

1. Psychological and psychiatric examination findings demonstrate the rationale, particularly from the economic point of view.
2. Cosmetic results not satisfactory as yet.
3. No ulterior effect from 11 operative procedures—nearly as many performed under local anesthesia as synergistic analgesia.
4. Absence of luetic or alcoholic history in family. Negative Wassermann test.

Examination: Right ear: Deficiency of upper portion of pinna and apparent absence of well formed meatus terminating blindly at a depth of ⅛ of an inch.

Left ear: Normally developed.

X-ray: Right: Evidence of bony labyrinth. No apparent pneumatization of mastoid.

Left: Evidence of bony labyrinth. Apparent pneumatization of mastoid.

Functional tests: All impracticable, though evidence of normal response to sound.

Physical examination: Negative in every particular.

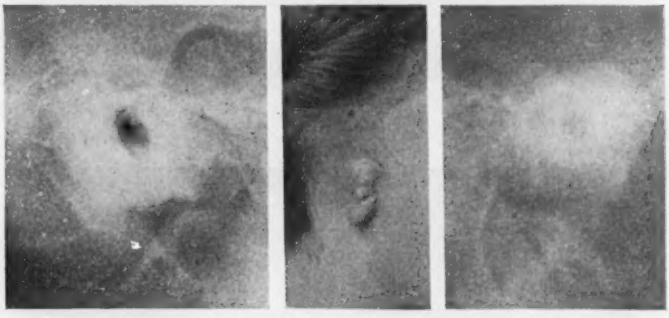
Summary: The surgical intervention in this case was two-fold value: First, in an attempt to ascertain the presence of a bony canal as far as the middle ear, and second, to relieve a most distressing depression of the parents, for in all my experience with these cases, this couple felt it most keenly. Both conditions were met satisfactorily, for a structure in the depth of the canal resembling the tympanic membrane was encountered and the parents were extremely happy with the effort that was made to improve the appearance of the deformed ear.

Examination: Right ear: Deficiency of entire ear, except for presence of lobule and tag. Absence of external auditory canal.

Left ear: Normally developed.

X-ray: Right: No pneumatization of mastoid. Faint trace of auditory canal. No evidence of bony labyrinth.

Left: Slight pneumatization (patient had violent suppurative otitis media when an infant). Auditory canals clearly outlined. No evidence of bony labyrinth.



Functional tests: C. V., right, 15 feet; left, 20 feet plus. W. V. (hissing sounds), right, 6-10 feet; left, 20 feet plus. W. V. (low tones), right, contact; left, 20 feet plus.

Tuning forks (g^1 to c^4): Right, negative; left, all normal time.

Galvanic electric current: Right, negative; left, positive.

Weber test: Lateralizes to the left.

Diathermia current: No response on either side.

Hot and cold water: Normal response on left side.

Turning: Normal response in all canals on both ears.

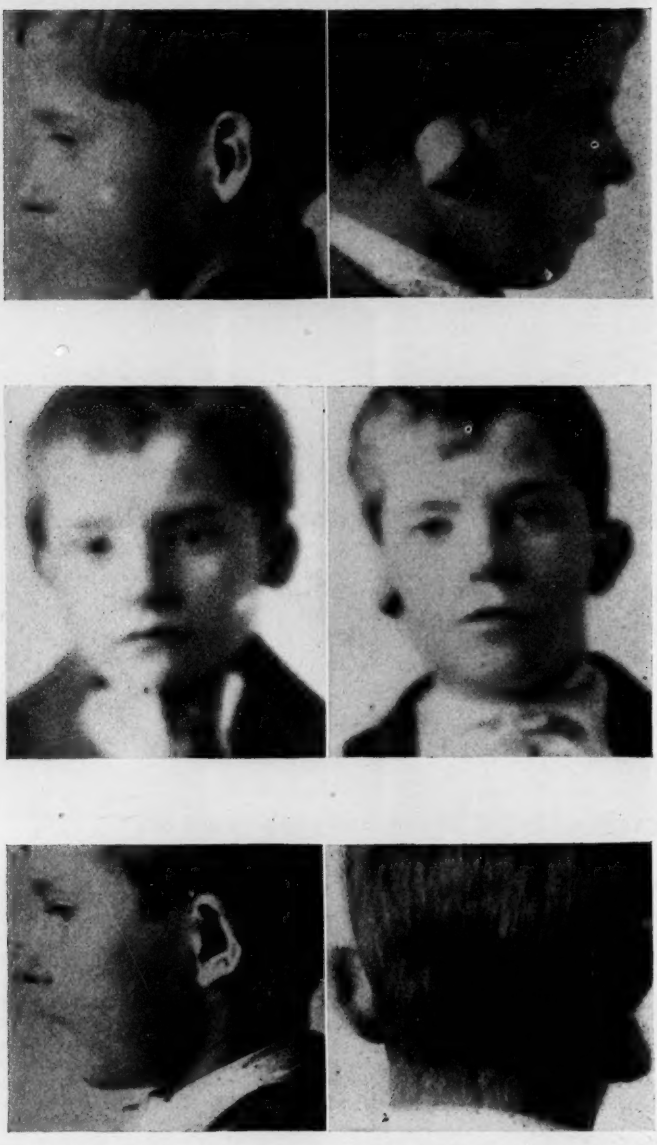
Falling test: Normal response after turning.

Past pointing: Normal response after turning.

Physical examination: Negative in every particular.

Psychological and psychiatric examination: Not completed.

Summary: The surgical cosmetic results thus far obtained have been so poor that one would ordinarily expect the patients to quit, especially since this was a physician's child. However, the opposite is true. There has been a marked change in the psychic or mental state of the child as well as that of the mother. Particularly has this been emphasized in the child's interest in her school work. Before she was operated on she would shun the class room and now is an excellent student.

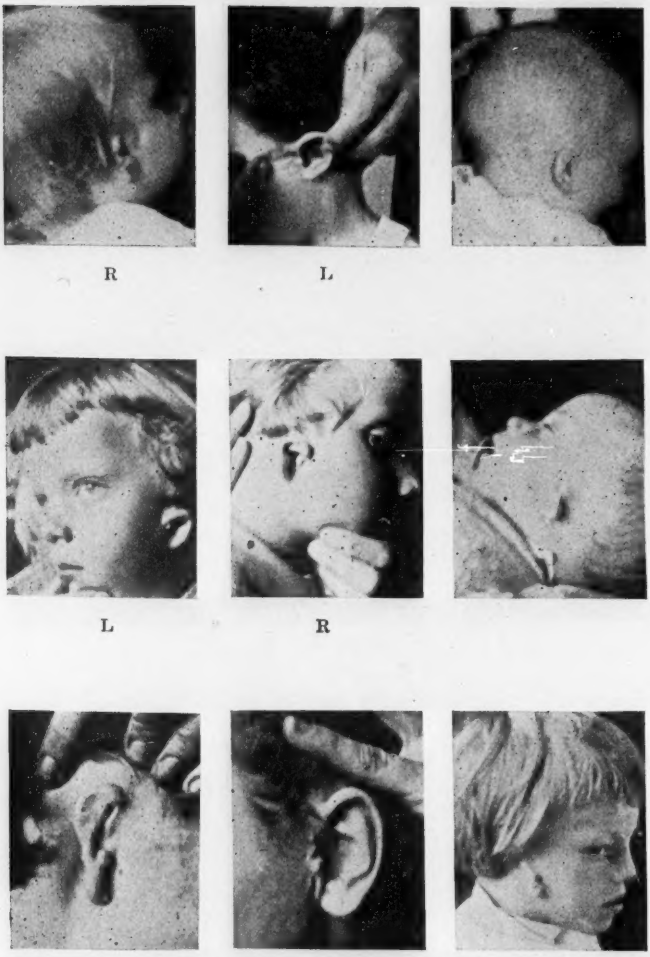


Deformities of external ear, including hemifacial atrophy in two brothers

Series of operative procedure in one case from beginning to end.
(Plate I.)

Series of operative procedure in one case from beginning to end. (Plate II.)

Series of operative procedure in one case from beginning to end.
(Plate III.)



Group of twenty congenitally deformed ears.
(Plate I.)

Group of twenty congenitally deformed ears.
(Plate II.)

CAUSES OF FAILURE IN CORRECTIVE RHINOPLASTY —LANTERN DEMONSTRATION.*

DR. JACQUES MALINIAK, New York.

In presenting this subject before an assembly of rhinologists, I feel that I am speaking to those of our profession who are most interested and best qualified to undertake this branch of surgery. Rhinologists are familiar with nasal structures and they alone are able to diagnose nasal and paranasal diseases, which may contra-indicate plastic operations. Moreover, the rhinologist constantly sees patients with nasal deformities of traumatic or infectious origin. Corrective rhinoplasty is, in fact, often only the terminal stage in the treatment of a chronic nasal disease (syphilis, lupus, etc.) or of a nasal trauma (post-operative or accidental). Although it is logical that these operations enter into the field of rhinology there is a series of requirements indispensable to anyone who undertakes this kind of work.

I shall not be able to dwell here as much as I should like on the different aspects of this interesting subject. Therefore, I shall limit myself chiefly to the mistakes most commonly met with, as I believe that, recognizing their causes, we shall be able to avoid them.

I. GENERAL CAUSES OF FAILURE.

1. *Personal Factors.* It goes without saying that a general surgical training and a minute knowledge of the technic are quite indispensable for success. But this is not all. Imagination, with ability to think in three planes, and some artistic inclination are not less needed in rhinoplastic surgery.

2. *Necessity of Analysis.* An analysis of a deformity consists of a graphic schematization of the dimensions, form and position of a defect or a superabundancy of the nasal tissues. With this analysis, a precise judgment of the different stages of reconstruction is possible. Thus, a defect of the middle part of the nose, causing the retraction of the nasal tip upwards, may mislead in the diagnosis of this deformity. Fig. 1 shows a graphic scheme of such a case with an apparent defect at (a), the real defect at (b) and the total skin defect at (c). The latter will be covered by a pedunculated skin flap from the forehead or elsewhere.

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The graphic scheme of the normal nose should also be impressed on the memory, since ignorance of it is often followed by failures. Four surfaces are to be remembered: (Fig 1d.)

a. The upper surface containing the bridge increases in width from the point of attachment to the end.

b. The two sides, enlarging toward the nostrils.

c. The base, wider at the attachment to the face than at its upper part.

The nose is broader and deeper at the base than at the region of the eyebrow.

3. Anesthetics. The choice and the administration of the anesthetic may influence to a great degree the final result:

a. *General anesthesia* has rarely to be employed as it compromises, the asepsis, always difficult to maintain about the mouth and nose. It increases the bleeding and therefore makes the operation more tedious. Chloroform, particularly, should be avoided as it increases the arterial pressure and favors post-operative hemorrhage. General anesthesia is, however, indicated in the reduction of recent fractures, accompanied by a marked inflammatory reaction of the tissues. It may also be indicated in nervous subjects in removing the costal cartilage after the rest of the nasal operation has been done under local anesthesia. Pharyngeal or laryngeal intubation avoids the use of a mask and the proximity of the anesthetist.

b. *Local anesthesia* may present difficulties to the unskillful. The appearance of a nasal tumefaction due to novocain infiltration partially masks the real deformity and therefore makes the exact appreciation of the latter difficult. This may be in part overcome by multiple injections of small doses of novocain, some of which is eliminated through the punctures.

4. Infection. a. *Infection due to improper technic* may be followed by irreparabe damage. Subcutaneous infection may result in the formation of a phlegmon and chronic inflammation of the nasal tissues. The region around the nose and mouth is rich in blood vessels and lymphatics and a foreign bacterial flora is easily spread.

The greatest care has to be taken in preparing the operative field. The nasal cavities should be washed with boric acid and bichlorid of mercury. They are packed during the operation with strips of iodoform gauze and isolated from the vestibules by cotton soaked in bichlorid of mercury. The hair of the nasal vestibules is cut and the region cleaned with sublimate and swabbed with 3 per cent tinc-

ture of iodin. As the endonasal incisions are made exclusively in the vestibules, with this technic, the asepsis is assured.

Great precaution should be used in the removing and preparation of free grafts. They should be handled exclusively with instruments. Their introduction by the endonasal route is done by means of a narrow nasal speculum, which separates the lips of the vestibular incision.

The precautions should be still more rigorous with the ivory prothesis which I generally introduce by an incision in the inner third of the eyebrow. During the dorsal skin separation, subcutaneous bleeding occurs and a hematoma may result if the part is not compressed at the time and after the operation. Hematoma compromises the taking of the transplant and favors suppuration.

Fig. 1. (a, b, c) Graphic schematisation of a nasal defect. d, Nasal graphic scheme. e. Tubed temporal flap epidermized at its end for a partial nasal defect.

b. *Infection due to chronic diseases.* Infection in a state of evolution in the nasal cavities or sinuses absolutely contra-indicates a plastic operation. This is also one of the reasons why the rhinologist is especially qualified for this work, as he is a better judge of the endonasal pathology.

One should also abstain from interventions in the presence of eczema or any infection around the nares. In the course of a latent nasal or paranasal infection, the endonasal route should be avoided for transplant introduction. The inner third of the eyebrow or sometimes the columella (incision of Monk) should be the site of election in these cases.

Fig. 2. Correction of a middle-sized saddle deformity with an auricular cartilaginous graft.

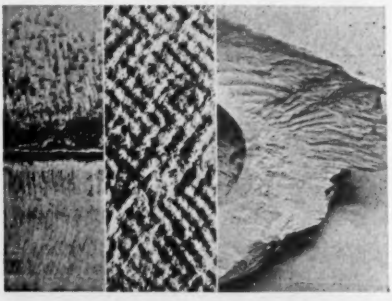

Fig. 3. Structure of ivory: bone canals appearing as small dark knots on the radiating lines. On the bottom the interior hollow part of the tusk.

Fig. 4. Correction by ivory implantation through the eyebrow.

An investigation of chronic infections, especially syphilis, should never be omitted. One avoids, thus, grave consequences. On the other hand, the persistence of a positive Wassermann test does not contra-indicate the operation, if anti-syphilitic treatment has been pursued for a prolonged period and the patient does not present active specific symptoms. Great attention should be paid in these patients to the preparation of pedunculated or free skin flaps. As a result of syphilitic endarteritis, these often show a defective circulation and necrose rapidly. Before their transplantation into the nasal defect, to be assured of their viability, it is advisable to sew the pedunculated flap back in its original bed. In this way, a certain increase of blood supply is provided for the distal end of the flap, and thus complications are avoided during the healing process.

5. *Ignorance of Some Principles in Rhinoplasty.* It is not the object of this paper to discuss in detail this vast problem but some fundamental principles will have to be mentioned as ignorance of them was the cause until late of repeated failures in this domain.

a. The presence of skin covering, nasal lining and support is essential to each nasal reconstruction.

b. The technic is more precise and the cosmetic result better by rebuilding the soft nasal parts first and providing the support afterwards.

c. The external covering is obtained from the forehead, chest (tube-pedicle flap), cheek or arm. The frontal pedunculated flap gives the best results, as it matches more nearly the nasal skin. A tubed temporal flap may be used with advantage for partial nasal defects[2] (Fig. 1e). The flap should be prepared exactly according to a tinfoil pattern of the raw surface and should be sutured at a natural tension and under gentle pressure to insure its proper nourishment. The arterial flap of Esser,[1] without skin pedicle, involves a risk on account of the danger of sectioning the vessels during preparation of the latter.

d. The great difficulties in rhinoplasty which could not be overcome by the efforts of surgeons during many centuries have been due to failure to provide a nasal lining. The experience gained during the last war finally solved this problem. This lining may be formed from the skin around the defect or by an epithelial inlay.

e. *Esser's epithelial inlay.* This method consists in epithelization of a cavity by a Thiersch graft introduced by means of a moulded piece of "Stent". This dental compound, when warm, takes the shape of the cavity. Wrapped round by the Thiersch graft (epi-

dermis inward), it is left there for ten days and when removed it leaves the cavity epidermized.

The difficulties ordinarily met with in the treatment of stenosis of the nares are largely overcome by this procedure. That of traumatic or infectious origin (syphilis, lupus) and also occurring in

Fig. 5. Removal of an osteo-cartilaginous hump with shortening of septum and lateral walls.

Fig. 6. The same as in Fig. 5. The swelling still present when photograph was taken.

the course of a rhinoplasty should be treated exclusively by this method. In providing a lining by epithelial inlay to the frontal flap before its removal we will have the frontal defect epidermized at the same time (Fig. 1e). The epithelial inlay also renders great service in the correction of a common type syphilitic saddle nose.

providing the missing lining by skin graft application to the nasal cavity. Without this, the nose continues to have, in spite of the correction by a support, a syphilitic appearance.[2]

II. CAUSES OF FAILURE IN PARTICULAR DEFORMITIES.

1. Saddle Nose. When normal skin covering and nasal lining are present in a saddle nose, providing a nasal support for the dorsum is all that is necessary. The nasal tip may need special correction. We have a choice of auricular or costal cartilage as well as ivory. Auricular cartilage may furnish a graft sufficient for middle-sized deformities and makes the use of costal cartilage unnecessary (Fig. 2). Failures, due to the curvature and the tendency to bend of costal cartilage are difficult to avoid. The removal of a fragment from the junction of the sixth and seventh costal cartilages and its use without perichondrium would lessen the chance of this. The use of celluloid or paraffin is to be condemned. Ivory (Fig. 3) being an organic substance, similar in structure to bone, is used with success, especially in pronounced nasal defects, requiring a great amount of material (Fig. 4). The comparative value of these transplants has already been described by me elsewhere.[3a] The syphilitic saddle nose with a great loss of the lining needs the replacing of the latter before the introduction of a nasal support. This is done by separating through the buccal route, the skin covering from all its adhesions, removal of all scar tissue and introducing, by the same route, a Thiersch graft on a molded "Stent" which covers all the denuded surface.[2] The nasal support is introduced some months afterwards. This method gives better cosmetic results but demands much time from the patient and the surgeon. In certain cases with limited destruction of the mucous membrane, an ivory support, reconstructing completely the lateral nasal walls as well as the bridge, may be required and will give the same result as an isolated cartilaginous transplant.[3b]

2. Flat Nose. The flat traumatic nose may often be avoided by preserving the anterior nasal spine during a submucous septal resection. The correction has to consist in lifting the nasal tip and dorsum by cartilage transplantation in the columella or at the nasal bridge. In other cases, defects of neighboring tissues (cheeks and upper lip) produce this deformity by scar retraction. In correcting the latter, the resulting deformity is overcome.

3. Short Nose. The correction of a short nose by transplantation of cartilage is a common mistake. It is the length as well as the height of the nose which should be increased. We begin by shifting downward from the nasal dorsum a reversed V-shaped skin flap

which is sutured in a lower position. The dorsum is thus lengthened. A support for it has to be provided three weeks afterwards.[3a]

4. Oversized Nose. Many types of oversized noses with infinite variations in each exist. The amount of tissue to be removed

Fig. 7. The same deformity as in Fig. 5. Less pronounced.

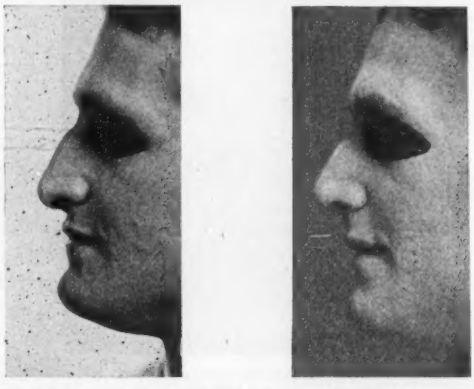

Fig. 8. Long hump nose previously corrected elsewhere by a wedge-shaped excision from remains of quadrangular cartilage. Failure resulted, as great part of septal cartilage was missing after submucous resection. The correction was done by me after reinforcement of the septum by cartilage transplantation.

should be exactly determined before the operation. This is necessary because the infiltration of the subcutaneous nasal tissue by novocain changes entirely the shape of the nose and misleads the surgeon, as mentioned above.

a. *Osteo-cartilaginous hypertrophy.* In an exaggerated convex profile, we may have an osseous or osteo-cartilaginous hypertrophy or a rounding of the profile. The failure most commonly met with is an irregularity of the dorsum, due to an insufficient and unequal removal of the bony and cartilaginous parts. An exaggerated flattening of the bridge also frequently follows. A subperiosteal removal of the osteo-cartilaginous hump with a saw and a thorough modeling of the bony surface with concave rasps and button knives will avoid these defects (Figs. 5, 6, 7).

b. *Bony width.* In correction of the bony width, the inward mobilization of the lateral walls has to be complete to assure a per-

Fig. 9. Arched alar cartilaginous bridge and its nasal topography.

manent result. Too often, the frontal process of the maxilla is infracted only in its lower part, leaving intact the nasofrontal connection. The incompletely infracted part in this case has a tendency to assume its former position. The angular saw introduced through a vestibular incision in front of the pyriform aperture has to be placed on the frontal maxillar process as far as the nasofrontal suture. The orbit should be protected by limiting the field of section with the thumb and index finger. The infraction will be

completed with the fingers or, if necessary, by means of the osteoclast and mallet. Permanent results cannot be assured without the daily application of a compressor for about half an hour for some weeks, beginning ten days after the operation.

c. *Long septum.* In shortening the septum, the volume, form and location of the excised segment affect the result. The form of this segment is triangular with the base anterior, or hemispheric with the convexity downward, depending upon whether the columella is straight or convex. We should avoid the removal of too large a fragment as this will cause irreparable damage. We must calculate it beforehand by lifting the columella and measuring the septal fold thus formed. The shortening will necessarily be done at the expense of quadrangular and alar cartilages (septal segment) for it is by the junction of these two cartilages that the position of the nasal tip is determined. The septal shortening done exclusively at the expense of the quadrangular cartilage, as we sometimes observe,

Fig. 10. Quadrangular excision of septal alar cartilages for correction of a protruded nasal tip.

is erroneous and will have, as a result, an ugly elevation of the tip. The lifting of the latter to the level of the dorsum is brought about by oblique sutures to each side of the cartilage. A matrass suture through the entire thickness of the cartilages will assure a good suspension. This will not occur when the septal cartilage is lacking. In such a case, before the shortening of the septum, its reinforcement by implantation of cartilage is necessary (Fig. 8). Whenever a submucous resection is done in a nose needing at the same time a shortening, the cartilage should be removed economically, saving its anterior inferior segment.

There must be a prophylactic exaggeration of the correction as the resultant traction of the scar pulls the tip backward toward the anterior nasal spine.

In a long nose the lateral walls are shortened at the expense of the triangular cartilages. The post-operative scar traction which follows is directed toward the pyriform aperture.

d. *Bulbous nasal tip.* Bulbous nasal tips may be due to bulging of the alar or triangular cartilages or both as well as to the superabundancy of the subcutaneous fat.

1. Excision of segments of alar cartilages with the adherent mucous membrane on both sides of the septum is supposed to break the arched alar cartilaginous bridge (Fig. 9). But it is the end of the bridge adjacent to the septum and not its middle part which needs to be removed. This is also true of the triangular cartilages.

Fig. 11. Corrected protruded nasal tip requiring a subsequent modeling of the shortened columella.

Fig. 12. Correction of an old fracture with lateral scoliosis and flatness of dorsum. As patient refused to provide his own cartilage, the nasal bridge was corrected by ivory transplantation.

2. When this narrowing of a tip is required in a deformity needing also a correction of the dorsum, the incision below the triangular cartilage made for this unites with the wound, resulting from the partial excision of the alar cartilage. A blind pocket formation with retention of secretion may result. Redness of the nasal tip with or without acne is not of rare occurrence in these cases. To

avoid it, I leave a narrow mucous membrane flap between the two wound surfaces making a submucous excision of the upper part of the alar cartilage.

e. *Protruded nasal tip.* For correction of advanced cases, a quadrangular fragment has to be excised from the alar cartilage of the cutaneous septum. The complete correction of the protrusion requires that the length of the defect should be greater than the length of the protruded part, since by suturing the defect its posterior edge is pulled forward (Fig. 10). The excision of a large fragment may result in the formation of a cutaneous fold in the columella, requiring a subsequent correction (Fig. 11).

3. Mismanagement of Nasal Fractures. Early recognition and treatment of the fracture is necessary to avoid functional nasal disturbance and external deformity. The fractured nasal bones and septum, easy to correct immediately after the injury, may present great difficulties to reduction at a later date. In recent cases, the lifting of the fractured nasal bone and straightening of the septum from the inside by nasal packing and the application of a lead splint is all that is required to assure a good result. Sometimes the bony nose will have to be mobilized with forceps to obtain a complete reduction.

Failure to correct a recent nasal fracture causes great difficulties in later attempts to treat the resulting scoliosis and the obstruction. When septal shortening is needed the air passages will have to be freed by economical submucous resection before the correction of the external deformity.

A simple infraction and mobilization of the lateral walls is insufficient: a wedge-shaped resection from the scoliotic wall has to be added. A disjunction of the nasal bridge from the frontal bones is not less important. The permanency of the correction will be assured by proper after-treatment with a nasal unilateral compressor (Fig. 12).

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THE SIGNIFICANCE AND PREVENTION OF BLINDNESS DUE TO INTRANASAL DISEASE.*

Dr. Mark J. Gottlieb, New York.

Blindness and lowering of the visual capacity from disease of the nasal accessory sinuses is far more common than is generally supposed. The ophthalmologist who examines the visual fields for light and color perception on every patient who presents himself for treatment will attest that it is surprising to note the number of patients with concentric contraction of the visual fields without even being cognizant of it.

The causes of retrobulbar optic neuritis are not many. First and foremost among these is nasal accessory sinus disease, particularly disease of the ethmoid and sphenoid. Secondly, abscesses at the apices of teeth. Thirdly, and far less common, are all the other causes put together, and these are absorption of toxic material from the intestines, inhalation or ingestion of poisons such as lead, arsenic, acetone, etc.; diseased states most prominently among these are syphilis and probably diseased tonsils. I say the last advisedly, because from the opinion of those who see a great many cases of retrobulbar optic neuritis and from my own experience, we have no convincing evidence that the tonsil was actually at fault in any of the cases.

To enjoy a proper conception of the reason why the ethmoid and sphenoid sinuses play such an important rôle in the etiology of this malady, it will be necessary for us to review the relation of the optic nerve and optic chiasm to these sinuses. You are all aware that all skulls differ slightly in shape and size and that the relation of the optic tract to these sinuses varies also. Accordingly, any combination of relationships may be encountered in a large number of skulls.

The optic commissure very often is situated directly over the sphenoid sinuses so that disease of this sinus may easily affect the nerve at this point either by direct extension through bone necrosis or by dehiscense of the sinus wall at this point or through collateral edema and inflammation by exension from the sinuses. The orifices of the sphenoid sinuses may occur below the optic com-

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missuer, on the same level or even above it, so that the higher the sphenoidal opening the more likely is the nerve involved because the accumulation of pus will be greater and the sinus will become fuller as the orifices of the sinus is placed at a more elevated position. Because of this very intimate relationship of the sphenoid sinus to the optic chiasm amaurosis from disease of the sinus is very often bilateral.

As the optic nerve progresses forward to the eye it lies external to the posterior ethmoid cells and remains in intimate contact with this sinus for about half its length on the average. It is not more than 3 m.m. away from the sinus during the first half of its course forward toward the optic globe. According to Loeb, the average length of the optic nerve in fifteen heads was 44 m.m. The sinus portion of the nerve was 24 m.m. (average) and the free portion of the nerve was 20 m.m. (average). The nerve may lie on a dehiscence of the sinus, it may lie on the sinus or the sinus may overhang it.

The size and shape of the optic canals vary in different individuals, and the two sides often are dissimilar in the same individual. Accordingly, it may be presumed that anatomical variations of this kind may have some relation to the incidence and severity of retrobulbar optic atrophy in a given case. White (THE LARYNGOSCOPE, XXXIV., 4, April, 1924, p. 254) has made an X-ray study of the optic canals in normal individuals and those suffering with optic neuritis. He found that the narrower the canal the more extensive the pneumatization around it. Where the pneumatization is greatest, the bony wall is thinnest and more vulnerable from proximate disease. The optic canal is usually circular. A few are flattened on top; in these the pneumatization is most pronounced in the lesser wing above. When the shape is oval (rare) pneumatization occurs above and below. If the shape is triangular (very rare) there is extensive pneumatization into the bridge formed by the lateral root of the lesser wing of the sphenoid bone. Canals which are under 4.5 m.m. in diameter are usually irregular. Shape, however, is not always an indication of size. The average diameter in twenty-five normal individuals was found to be 5.35 m.m., five of these were slightly oval. The average diameter of the optical canal in twenty-five cases of optic neuritis was found to be 4.68 m.m., six of these were oval. The difference between the vertical and horizontal was found to be greater in the diseased cases than in the normal cases. Nineteen out of twenty-five oval canals showed optic nerve involvement. Of the twenty-four round canals, there were twelve

that had nerve involvement. In some acute and chronic cases, the canals were found to be large, and White believes that the disease in these is not due to direct extension, but to bacteremia or toxemia, probably from diseased teeth or tonsils. He also feels that the finding of large round canals in a patient suffering from retrobulbar optic neuritis is a contraindication for nasal accessory sinus surgery. A canal of 4 m.m. or less in a patient with severe optic atrophy suggests immediate ventilation of the sinuses. A canal of 4.5 m.m. gives more time for study, while one that is 5 m.m. or over will recover from a very acute attack, either spontaneously or as the result of local treatment.

You will naturally inquire what is the morbid anatomy which produces this condition? All observers have started work in this field with the idea that manifest purulent discharge should accompany a case of the optic nerve from an infected sinus. As a matter of fact, the presence of pus in the nose is the exception rather than the rule. The histological findings in the scrapings from the sinuses and turbinate bones are vague and similar processes may be encountered in heads wherein the optic nerves are not the seat of neuritis. The microscopical appearance of the tissues in the nose varies with the age of the patient, the state of his general health, the season of the year, the intensity of the climate, and these variations may border on disease and may be construed as pathological by one who does not correlate the clinical with the laboratorial. In most of the cases a functionless overgrowth of supporting tissues is found, but such hyperplasia is encountered in a great many sinuses and no involvement of the optic nerve exists. It is possible that hyperplasia predisposes and an infection excites an edema which compresses the nerve in its unyielding canal.

The scrapings from the ethmoid and sphenoid regions of Cases 1 and 2, reported below, were submitted to Dr. Eli Moschcowitz for microscopic study and he has been kind enough to accompany the report with a critique of the subject, which is as follows:

Case 1: The case of M. B. Both right and left ethmoids show the same structure. The slides show small sections of tissue typical of nasal mucosa, each containing a small area of cancellous bone. The glands are abundant and show no evidence of increased activity. The blood vessels show no thickening and are surrounded by a well developed erectible envelope of smooth muscle. The bone is normal and the contained marrow is fatty. The mucosa is absent in many areas, but this is an artifact. Such as is preserved shows no infiltration or desquamation. The stroma is fairly firm and is

more fibrous than the average ethmoid. There are a few areas of round celled infiltration, but they are sparse and not more abundant than the vast majority of ethmoids show. There are not eosinophiles.

Case 2: The case of I. B. Both right and left ethmoids show the same structure. The slides show one or two large and several small pieces of nasal mucosa, some containing small areas of cancellous bone. The structure is practically identical with the above, except that the stroma is perhaps more fibrous and there is no infiltration with round cells. The mucosa is everywhere well preserved.

In neither of the two specimens is there any evidence of polynuclear infiltration, either localized or diffuse or ulceration of the mucosa.

The only change in both specimens that can in any way be described as pathological is a fibrosis more advanced than that encountered in the average ethmoid. As a rule, the fibrous tissue is looser and considerably edematous. In every other respect, the picture as revealed in these slides is that of a normal nasal mucous membrane.

As far as our studies of ethmoid mucosa removed at operation, permit one to say such findings as I have just submitted are the rule. Even in patients in whom the surgeon has found frank pus coming from the ethmoid region, sections of such ethmoids reveal but slight deviations from the normal. Never does one find, as would be expected, pockets of pus, polynuclear infiltrations, mucosal ulcerations, or indeed any of the changes usually associated with chronic purulent mucosal inflammations. At the most, the only changes that one finds is a greater or lesser infiltration with round, plasma and eosinophylic cells, and a greater or lesser fibrosis.

It seems to me that disease of the ethmoids must be interpreted more interms of diseased function than in pathology. In other words, one cannot tell by mere histological study of the tissues the presence or degree of disease of the ethmoid structure. This is apparently entirely a clinical matter. While this statement may appear strange in the light of convention, there is a close analogue in another mucosa, namely the endometrium. The long condemned purulent mucoid discharge from the uterus is cemented in our minds as an endometritus, nevertheless, curettings from such cases fail to reveal any deviations from the normal. The so-called pathological changes which have hitherto been regarded as pathagnomonic of endometritis are now known to be the normal changes incident to the menstrual cycle. Indeed, there is considerable doubt among pathologists whether a chronic endometritis, aside from specific etiology, really exists.

White believes that there must be some fundamental difference, from that which is usually found, in the anatomical relation of the posterior portion of the middle turbinate to the septum which more or less crowds this part of the nasal chamber, and an acute non-purulent infection super-added would produce swelling and edema sufficient to compress all other tissues in this region and affect the optic nerve either by direct extention or collateral edema. He has found in a large percentage of cases of retrobulbar optic neuritis that the septum was deviated and crowded an already enlarged posterior portion of the middle turbinate. At times, the turbinate was found to have a large cell in its body.

Then what are the findings in the nose and by what criteria may we judge that the cause lays in the ethmoid or sphenoid? There are no criteria, the nasal mucous membrane and turbinates may appear to be normal. X-ray pictures of the sinuses are of no service, especially if the report is negative, and negative findings are the rule. One may see an enlarged turbinate crowded by a deviation of the septum in the region of the sphenoid. There may be exposed bone in the sphenoid or in the region of the sphenoid. But all of these may be absent and yet on operating on the sinuses the patient recovers when all other means have failed.

Accordingly, one is anxious to know what attitude the ophthalmologist takes toward this important subject, and Dr. Cyril Barnert has been kind enough to write for me, the following information, which I quote verbatim:

"Retrobulbar neuritis is an interstitial neuritis affecting usually the axial bundle of the orbital portion of the optic nerve. The axial bundle which innervates the macular region of the retina is a highly developed special sense organ and is more vulnerable than the remaining fibres of the nerve so that pressure on the nerve in the orbital canal, or even at the chiasm, is felt first by these delicate fibres. The small margin of safety in the orbital canal permits of but slight swelling of the nerve or its enveloping periosteum without damage to the neurons.

Retrobulbar neuritis occurs in two forms, acute and chronic. The acute form is usually unilateral, and is associated with severe headache on the same side, pain or movement of the eyeball and tenderness on pressing the eye backward. There is rapid impairment of sight, first noted as a central blur or scotoma and rapidly increasing until but a narrow peripheral field remains. The fundus shows as a rule no abnormalities, but occasionally later, a blurring and congestion of the nerve head appears. The course is rapid and the

prognosis is good if the underlying cause is found and promptly removed. The etiology is an infection from adjacent accessory sinuses, infected teeth or tonsils, acute infectious diseases, certain poisons (lead, alcohol, acetone). A recurrent type is seen as a part of a multiple sclerosis. The chronic type is more frequent, usually bilateral and may cause no symptoms, or but slight diminution of visual acuity. It is often discovered casually in the routine examination of the visual fields as a concentric contraction of the fields for form and especially those for color, with or without a relative or absolute central scotoma for forms or colors. The causes are the same as in the acute form, but of lower grade or intensity, and the treatment consists in finding and removing the cause. The recovery of normal fields and vision is lower and less certain than in the acute form."

In cases of threatened blindness from nasal accessory sinus disease of the nonpurulent character, the outlook for recovery is exceptionally bright as will be gleaned from the following case reports.

Miss M. B., age 17 years, school girl. Appeared first for examination and treatment on Feb. 11, 1924, complaining of frontal headache, tenderness over both frontal sinuses, and nasal discharge. The pain in the forehead continued after the nasal discharge had ceased, and the patient did not complain of difficulty with her eyes, but because of the fact that the headache persisted in spite of treatment, she was sent to Dr. Cyril Barnert for the purpose of a routine examination of her eyes. Surprising as it may seem, the report of the eye findings indicated that the patient was rapidly losing her sight. X-ray showed no disease of the nasal accessory sinuses The Wassermann was negative. All other causes having been eliminated, on June 13, 1924, a bilateral ethmosphenoidectomy was performed and both middle turbinates were preserved. Following the operation, the headaches disappeared. On July 29, the ophthalmologist reported a moderate improvement in the seeing capacity, with a broadening of the fields for form and color. Directly after that, however, her vision again began to be impaired and the question arose as to what procedure should be followed to prevent her vision from becoming permanently impaired. It was then decided to again attack both ethmoid areas, cut away all scar tissue, and remove both middle turbinates. This produced an immediate and progressive improvement, so much so, that on Aug. 29 her vision was found to be practically normal, and has remained so to date.

Miss I. B. referred by Dr. Cyril Barnert with the following note: "I am referring Miss I. B., who came to me this morning with a

history of rapidly failing vision in the right eye for the last ten days. Examination show normal conjunctivae, musculature, pupils, media and fundi in both eyes. There is a slight tenderness on backward pressure over the right globe. Perimetry disclosed a marked concentric contraction for form in the right eye with an entire absence of color perception. The left eye has a normal field for form and a contracted field for color with a relative central color scotoma. The vision in the right eye is reduced to counting fingers at 6 feet and can be improved but slightly with correction, although the girl stated that in an examination made while in Atlantic City a few weeks ago, the vision in the right eye was 20/20. The vision in the left eye is normal with correction of the hyperopic error.

"We are undoubtedly dealing with an acute retrobulbar optic neuritis in the right eye and a similar incipient condition in the left, and in view of the very rapid loss of vision, I would recommend an immediate exploration of the right ethmoid (and of the left as well, if practicable), even if there is no clinical or X-ray evidence of sinus disease." Signed: C. B., M.D.

X-ray pictures were immediately made and a negative report was obtained. There was a deviation of the septum in its posterior portion, the convexity of the bend being toward the right. However, this deviation did not crowd this area and it did not interfere with the operative procedure. It was impossible to probe the sphenoid sinuses.

On the following day both ethmoids were opened and all tissue removed with meticulous care. The right sphenoid was found absent and the left was very shallow, but extended deeply down into the pterygoid plate.

The patient did not improve as was expected and although the left eye became somewhat better, the right became progressively worse. This gave us a great deal of anxiety and we proceeded to eliminate causes. The Wassermann was found to be negative. The dentist found two teeth that were apparently diseased and removed them. The right eye continued to get worse, so much so that finally she could only distinguish light, and then she suddenly improved and has continued to do so ever since.

There will always be a question in our minds what the actual cause of this condition was. We are inclined to believe that the removal of the teeth had nothing to do with the result. This is one of the cases where loss of time may have spelled loss of vision for the patient. I cannot too strongly emphasize at this point, the neces-

sity of speed from the time that the patient first presents himself or herself to us with a complaint of blurring of the vision until every possible stone is overturned in an effort to prevent the patient from becoming blind.

In some cases of chronic purulent sinusitis, the visual acuity becomes gradually impaired, as a rule there is no central blurring of the vision, but the fields are contracted. This is very well exemplified in the following case:

Mr. J. S. L., age 60 years, bank examiner. Appeared first for examination on Mar. 6, 1924. For a great many years he has had a thick purulent discharge from his nose, necessitating the use of many handkerchiefs during the day, also expectorates constantly mucopurulent material which drops from the back of his nose. Catches cold frequently. For the past seven months, has experienced difficulty in concentrating his vision, principally with the right eye. When addressing the golf ball, is compelled to focus his vision repeatedly. He also complains of a mild photophobia. Mucopurulent material is seen dripping from the middle meatus on both sides, but more from the right. The right frontal sinus is cloudy, the left clear to transillumination. The antra are clear to transillumination. The right frontal sinus and antrum of Highmore are tender. He was referred to Dr. Cyril Barnert for eye examination, with the following result:

"He has a definite hyperopic astigmatism and presbyopia for which his present glasses are quite adequate. Perimetry discloses the fact that his fields are very good for form, while his color fields are relatively constricted, the right more than the left. This, however, together with his statement that he is at times conscious of a central blur makes a diagnosis of a beginning of a retrobulbar neuritis very probable. I think his sinuses should be looked into."

Accordingly, on Mar. 15, 1924, a bilateral ethmosphenoidectomy was done under cocain anesthesia. The right middle turbinate was preserved. The left was sacrificed because it interfered with the approach to the sphenoid sinuses. The sphenoid sinuses were found to be located unusually low down and in both instances extended deeply into the pterygoid plate. The right sphenoid was found to be distinctly diseased. The three days after the operation, the patient experienced a very decided improvement in his vision. This improvement continued for a few months, when difficulties of seeing began again to be manifest. On Oct. 7, 1924, he was again examined by Dr. Barnert, who found an increased constriction of the fields, especially for form. Very recently his nose was again ex-

amined, very little discharge was evident, but the patient still complained of difficulty of vision, especially with the right eye.

In the light of this and other experiences, certain lessons may be learned regarding the mode of operative procedure and the prognosis which the rhinologist should give to patients of this character. In the first instance, I am firmly convinced that the middle turbinate should always be sacrificed in a case of failing vision due to nasal accessory sinus disease. Second, in view of the fact that it is utterly impossible to open every ethmoid cell on account of the great number of anatomical variations in this field, I am now not inclined to give the patient as rosy a prognosis as I would in cases of non-suppurative inflammations of the nasal accessory sinuses.

SUMMARY.

Retrobulbar optic neuritis is caused in the great majority of cases by disease of post-ethmoidal and sphenoidal sinus.

If time permits all other causes should be excluded before operating.

Negative findings in the nose are the rule rather than the exception.

If time is precious one is justified in opening up the sinuses without further investigation.

The element of haste is so important that it cannot be overemphasized.

The middle turbinates should not be spared in any instance.

43 West 69 Street.

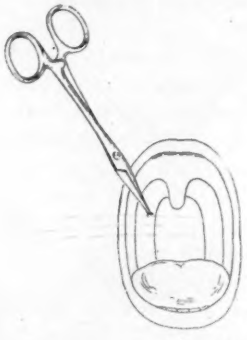
A LIGATURE SET FOR TYING BLOOD VESSELS IN THE PHARYNX AND OTHER DEEP CAVITIES.

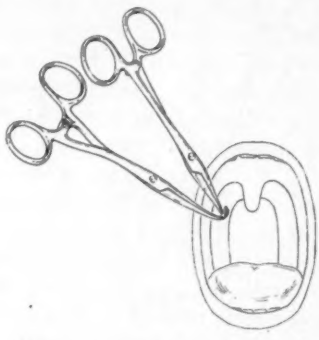
Dr. William Molt, Indianapolis, Ind.

All surgeons recognize the difficulty of tying bleeding vessels in the pharynx and other deep cavities. Even if one succeeds in passing a ligature around a hemostat by the use of a needle, it is quite often torn out during the tying process on account of the inability to get more than one finger in the proper position at a time.

In order to overcome this difficulty, I devised a curved forceps to act as a pedicle clamp; a loop carrier; a knot tying forceps and a pillar retractor.

After catching up the bleeding vessel in the usual way with a straight tonsil hemostat, slight traction is made which forms a pedi-





cle including the bleeding vessel (Fig. 1). The curved pedicle clamp forceps is then applied as shown in Fig. 2, and the straight hemostat removed. The ligature is now loosely tied outside the mouth around the shank of the pedicle clamp forceps, allowing for a loop about 2 inches in length. The loop carrier is then used to place the loop around the end of the pedicle clamp forceps (Fig. 3). The handle of the pedicle clamp forceps is then moved to the opposite side of the mouth, which secures the ligature over the end of the clamp (Fig. 4). The two free ends of the ligature are held firmly between the thumb and fingers of one hand, keeping the strands about 1 inch apart while the knot tying forceps are placed

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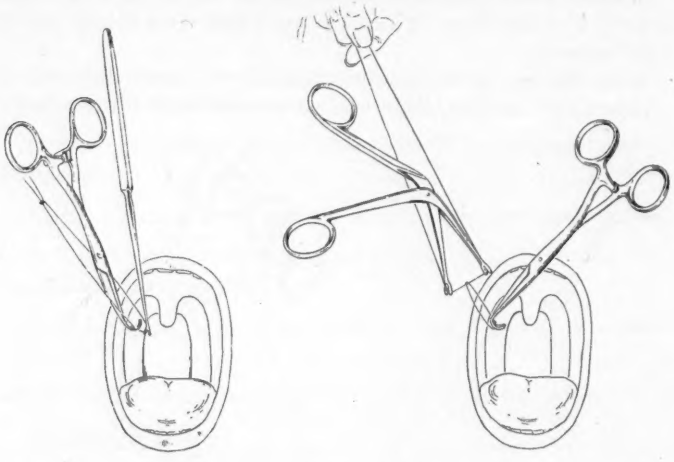
on the loosely tied knot (Fig. 4). Then by gentle pressure on the knot, together with an opening and closing movement of the forceps, the knot will slip down securely around the pedicle, which is still in the grasp of the pedicle clamp. At this point the tying forceps are opened wider and the tension is increased to the desired degree by pulling the ligature taut against the tying forceps. This tension is maintained while the assistant releases the pedicle clamp forceps.

Plain catgut (No. 1), softened by immersing in warm water, is the ligature of choice in most cases. There need be no fear of making too great tension in tying with the tying forceps as the knot is tightened by an opening movement of the thumb and finger instead



of the usual closing movement; this prevents one from unconsciously exerting too much tension. The knot tying forceps also acts as an equalizer of tension on the two strands, which insures an equal pull on both sides of the knot, regardless of the direction of the pull on the free ends of the ligature. See Fig. 4.

By using the pedicle clamp forceps and a hemostat as described it is possible to form a pedicle of any desired size containing only the bleeding vessel and the surface tissue, which may be tied without crushing any muscle tissue whatever.

These instruments are made by the Akron Surgical Instrument and Truss Company, 220 Massachusetts avenue, Indianapolis, Ind.

526-530 Bankers Trust Bldg.

TOBACCO AND EIGHTH NERVE LESIONS. REPORT OF NINE CASES.*

DR. V. K. HART, Statesville, N. C.

The following cases are presented because they are believed to be of extreme clinical interest. The writer has seen tobacco mentioned as a factor in chronic tubal catarrh and in auditory nerve deafness. Textbook discussions are very brief.

Therefore curiosity was aroused as to the exact part played by nicotine in nerve lesions of the internal ear mechanism. Furthermore, did it affect the eighth nerve as a whole, or was either branch apt to be involved? If either branch, was one more apt to be involved than the other? It was with these questions in mind that the following cases were studied.

It must be remembered that all these cases were private cases. Their comfort and convenience prevented some work from being done. Thus the writer would have liked to have routinely done both the caloric and the turning tests on all cases. However, having been through one, the patient frequently was not desirous of going through the other. It is believed, nevertheless, that enough data has been gathered to bring out several important points.

Some facts may be stated which apply to all the cases mentioned. To state these now will forestall monotonous repetition. In every case the Rinne was positive, *i. e.*, air conduction was greater than bone conduction. In no case was the retraction of the drums extreme, or was there marked thickening or atrophy, or abnormal relaxation. The Eustachian tubes were patulous in all the cases, though in two of them it was necessary to dilate the tubes first. The use of the otoscope in no case showed fixation of the malleus. Nasopharyngeal lesions and obstruction were absent in all cases.

There was no evidence of an intracranial lesion in any patient studied. No evidence of syphilis in any case was demonstrated, either clinical or laboratory. At no time were spontaneous past pointing or falling observed. In no case was there a chronically discharging ear and in only two a previous acute otitis media, cases 6 and 7. Tinnitus was present in case 6. Emphasis is laid on the fact, then, that an earnest attempt was made to rule out lues and

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middle ear pathology in every case. It is believed this attempt has been successful.

Case 1: A brief synopsis of the history will be given first. The patient had been having dizzy spells extending over a period of three years. They were particularly noticeable on sudden change of position. There is nothing of note as to his past medical history. He was particularly questioned as to a previous otitis media and absolutely no history of the same was obtained.

He has been an excessive user of chewing tobacco for over thirty years.

Physical findings: In giving these to prevent monotonous reading, unnecessary detail is omitted as to negative findings.

Male, age 59 years, white.

Eyes: A moderate refractive error is present which was corrected in each eye. The muscle balance is practically perfect and all other findings are negative.

Nose: The findings are essential negative.

Throat: Only finding of note is a pair of chronically diseased tonsils.

Ears: The canals show no abnormalities. The drums are of good color with some retraction of each which is not marked. The landmarks are well defined. The hearing tests follow:

Whispered voice, right, 12 ft.; left, 12 ft. C (tuning fork), right, 3/8; left, 3/8. C_1, right, 5/12; left, 5/12. C_2, right, 9/24; left, 9/24. C_3 right, 36/36; left, 36/36. C_4, right 48/48; left, 48/48. Weber not referred. Bone conduction, right, normal; left, normal.

The caloric reactions are by far the most interesting aspects of this case. Each ear was irrigated for as long as five minutes at a time with water at 68° F. No nystagmus swaying, past pointing, or nausea were induced. The irrigation was repeated in each ear, with a minimum of three minutes for each irrigation, with the head back and then with the face down. No reactions were obtained in any position. Transitory dizziness and nystagmus could be gotten by suddenly changing the position of the head.

Typical reactions were immediately induced in a nurse with the same technic. She was nauseated, fell and past pointed to the side of irrigation and had typical nystagmus to the opposite side. Moreover the caloric test was repeated on the patient a few days later with identically the same results as before. Unfortunately the patient could not be persuaded to return for the turning tests.

The patient was referred to the medical department for complete examination and all their findings were returned as negative.

Laboratory findings: Blood Wassermann negative. Complete blood count shows nothing of value. B.U.N. 11.25 mgm. per 100 c.c. Urine examination negative.

Diagnosis: Bilateral neuritis of the Eighth nerve of nicotine origin, vestibular impairment predominating.

This man's vertigo then is very probably due to a marked impairment of the vestibular apparatus. The foregoing statement is borne out by the fact that his dizziness comes on always with a sudden change of position. The writer is wholly unable to explain why the cochlear mechanism apparently escaped with little demonstrable involvement. Perhaps it will become involved at a later date if the patient continues to chew tobacco excessively. This is the only case where vestibular conduction was so markedly impaired with cochlear function as near the normal.

Case 2: This case is only briefly mentioned because it will help in an intelligent concept of the subject under discussion.

History: His chief complaint was a convulsive tic of the upper lip. His history brought out the fact that he had chewed tobacco, as he expressed it: "Ever since I could spit". He had never had a discharging ear and complained of neither poor hearing nor dizzy spells.

To save time and space, the details of his examination are omitted. His head examination was negative except for bad teeth. The medical findings were unimportant and they include a negative Wassermann. A diagnosis was made of habit spasm.

The point stressed in this case is a very definitely delayed caloric reaction in each ear. Nystagmus occurred in three minutes and a half when the right ear was irrigated and in three minutes when the left was irrigated. The hearing was apparently unimpaired.

The interpretation of this case is that the man had a very early involvement of the vestibular branch of the eighth nerve of tobacco origin as indicated by the delayed caloric reactions.

Case 3: History: The chief complaint was that of dizzy spells. He never at any time in so far as he knows has had a discharging ear. His past medical history shows that he had typhoid in 1903, malaria at the age of 12, and appendicitis in 1917, for which he was operated. He has chewed tobacco for a great many years and admits chewing as much as half a plug a day.

Physical findings: Male, age 47 years, white.

Eyes: Emmetropic. Presbyopia which is corrected by proper glasses. Other eye findings are wholly negative.

Nose: Septum somewhat irregular and turbinates congested. No pus demonstrable after shrinking.

Throat: Chronically diseased atrophic tonsils. Other findings are negative.

Ears: Canals negative. Drums of good color with slight retraction. Hearing as worked out with the tuning forks is entirely normal each ear.

The caloric reactions were present and typical in each ear. Nystagmus towards non-irrigated ear began in one minute right ear, and one minute and fifteen seconds left. Past pointing and falling were to the side of irrigation.

When examined by the medical department he was found to have a sacro-iliac subluxation. Otherwise the findings were wholly negative.

Laboratory findings: Blood Wassermann negative. Spinal fluid Wassermann negative and spinal fluid examination shows nothing of value. Complete blood count negative throughout. Urine examination negative.

It was felt in view of the above findings that the attacks of vertigo of this patient were due to a toxic disturbance of the Kinetic-static labyrinth. This was borne out by the fact that three weeks after he had very materially reduced the amount of tobacco used, the dizzy spells had practically ceased.

Diagnosis: Bilateral neuritis of vestibular branch of the eighth nerve, of nicotine origin, early stage.

Case 4: History: Chief complaint was that of dizzy spells. Had had them occasionally for the past fifteen years. He stated that he felt that he was going to fall over. They have been occurring more frequently lately. An attack lasts from fifteen minutes to an hour and he is relieved by lying down. He states that he has chewed tobacco since he was 20 years of age. There is no history of middle ear disease.

Physical findings: Male, age 55 years, white.

Eyes: He has a slight refractive error, which has been corrected for some time.

Nose: Negative.

Throat: Tonsils large and diseased.

Ears: Canals negative. Drums show no gross abnormalities. The ear record follows:

Whispered voice, right, hears well; left, hears well. Weber slightly to right. C, right, 5/8; left, 5/8. C_1, right 8/12; left, 8/12. C_2, right 18/24; left, 18/24. C_3, right, 36/36; left, 36/36. C_4,

right, 48/48; left, 48/48. Bone conduction, right, minus 5 sec.; left, normal.

Turning tests: Head 30° forward. Ten turns right in 20 seconds. Duration after nystagmus, 26 seconds. Ten turns left in 20 seconds. Duration after nystagmus, 22 seconds. Ten turns right in 10 seconds. Past pointed right. Ten turns left in 10 seconds. Past pointed left. Head 120° forward. Five turns right in 10 seconds. Fell right. Five turns left in 10 seconds. Fell left.

The patient's medical examination was essentially negative.

Laboratory findings: Blood Wassermann negative. Complete blood count negative. Spinal fluid clear and cell count normal. The state laboratory recorded the spinal Wassermann reaction unsatisfactory. Just why is not known. It is felt that it would be negative if repeated in view of the normal cell count.

This man had no middle ear lesion. There is no evidence of intracranial pathology. There are no uncorrected ocular defects. There is no evidence of cardio-vascular disease. Therefore, it stands to reason that his vertigo is probably a toxemia with a consequent early vestibular irritation. In view of his negative physical examination it is felt that this toxemia is of nicotine origin.

Diagnosis: Neuritis, vestibular branch of eighth nerve of nicotine origin, early stage.

His ear examination shows three slight deviations from the normal:

1. A diminished bone conduction of 5 seconds in the right ear.
2. A slight cutting down of the low and middle tones.
3. Slightly diminished time of nystagmus when turned to the left (22 seconds).

Any of these changes could be accounted for by errors in technique and have therefore been considered negligible.

Case 5: History: Chief complaint is that of dizzy spells which he noticed on going to bed and arising. He states that the room seemed to move about him. He has chewed tobacco for ten years.

His past medical history gives nothing of importance.

Physical findings: Male, age 43 years, white.

Eyes: Patient has a slight spontaneous nystagmus, rotary in character, labyrinthine in type with a quick and a slow component, on looking to right or left. It is more marked to the left. He has a small amount of hyperopia and a presbyopia. The latter was properly corrected when he came under observation. He has since been given a bifocal lens. The other eye findings are negative.

Nose: Negative.

Throat: Small atrophic tonsils.

Ears: Canals negative, drums show no gross abnormalities. There is a slight decrease in bone conduction of about 4 seconds in each ear; otherwise the tests are quite negative throughout. He hears all tuning forks well. Furthermore, he reacts typically to the turning tests. The time of nystagmus was evidently normal as nearly as could be estimated, taking into account of course his spontaneous nystagmus.

His medical examination showed no abnormalities.

Laboratory findings: Wassermann negative. Blood count negative. Urine examination negative.

Here again it is felt that this man's vertigo, in view of other negative findings, is due to a vestibular irritation of nicotine origin. This probably accounts for his nystagmus. The involvement is early because the nerve pathways as shown by the hearing and vestibular tests are intact. This fact is further emphasized by the patient's practically complete relief since he has discontinued the use of chewing tobacco.

Diagnosis: Bilateral neuritis, vestibular branch of the eighth nerve, of nicotine origin, early stage.

Case 6: History: The patient's chief complaint in contra-distinction to the preceding case was that of deafness and tinnitus. He had an attack of acute otitis media two years ago in the right ear. The ear discharged for two weeks, but has never run since that time. He states that he has never had a discharging ear before or since. His past medical history gives nothing of value except that he has been a prolific chewer of tobacco for the past twenty-five years.

Physical findings: Male, age 48 years, white.

Eyes: The patient has emmetropic eyes. He has a presbyopia, properly corrected by glasses. Slight spontaneous nystagmus, lateral with a tendency to be rotary, and labyrinthine in type was present. All other eye findings are negative.

Nose: Other than a moderately deflected septum, the findings are wholly negative.

Throat: The patient has chronically diseased atrophic tonsils. Other findings are negative.

Ears: Canals negative. Both drums are of fair color and moderately retracted. The right is slightly scarred. The hearing tests follow:

Whispered voice, right, 2 in.; left, loud only. C (tuning fork), right, 0/8; left, 0/8. C_1, right, 1/12; left, 0/12. C_2, right, 2/24;

left, 1/24. C_3, right, 2/36; left, 2/36. C_4, right, 0/48; left, 0/48. Weber unsatisfactory. Bone conduction, right, minus 12 sec.; left. minus 12 sec.

Here again the caloric reactions are of extreme interest. There was slight swaying and increased nystagmus after irrigating each ear for 5 minutes with the head erect. There was no well defined past pointing. Vertigo was not well defined.

Turning tests: Head 30° forward. Ten turns right in 20 seconds. Nystagmus duration 15 seconds before returning to what may be called normal. Ten turns left in 20 seconds. Nystagmus duration 10 seconds before returning to what might be called normal. Ten turns right in 10 seconds. Did not past point. Ten turns left in 10 seconds. Past pointed once. Head 120° forward. Five turns right in 10 seconds. Fell right. Five turns left in 10 seconds. Fell left.

The hearing in the left ear is slightly more impaired than in the right. Furthermore, when turned to the right, and this affects the left ear more than the right, he did not past point.

Laboratory findings: Blood Wassermann negative. Spinal fluid Wassermann negative and cell count 2 per c. m.m., lymphocytes. The fluid was clear and there was no increase in pressure. Urine examination negative. Blood count not reported.

It is interesting to note that he is more deaf in the left ear than in the right, although the right was the one in which he had an attack of otitis media. Furthermore his deafness is out of all proportion to any demonstrable middle ear pathology.

The short duration of nystagmus and the practically absent past pointing in the turning tests bear out the caloric reactions. Furthermore, the spontaneous nystagmus suggests vestibular irritation. Moreover, his vertigo was not marked after the turning and was of very short duration. Hence, the vestibular apparatus seems to be decidedly involved as well as the cochlear.

Having found the labyrinthine involvement on each side, the man was questioned as to dizzy spells. He admitted that he did have occasional attacks of dizziness, particularly with a sudden change of position of the head. Here, too, the muscle sense seems to have very well compensated for bilateral impairment of the kinetic-static labyrinth as it has in Case 1.

Diagnosis: Bilateral neuritis of the eighth nerve, both vestibular and cochlear, of nicotine origin.

Case 7: History: The patient's chief complaint was that of deafness. He had had an acute otitis media in the left ear some thirty-

eight years ago. This lasted only a few days. The ear has never discharged since. He chews tobacco four or five times a day and has done so for a great many years. He smokes a pipe about six times a day. First noticed trouble with his hearing about eight years ago. It has gotten worse lately. He never has had any dizzy spells and his past medical history gives nothing of value.

Physical findings: Male, white, age 64 years.

Eyes: Has a moderate refractive error and a presbyopia. Both of these have been properly corrected since coming under observation. Otherwise the eye findings are wholly negative.

Nose: No findings of importance.

Throat: Very small atrophic tonsils. Otherwise findings are negative.

Ears: The canals and drums show no gross pathology. The hearing tests follow: Whispered voice, right, 4 feet; left, 2 feet; C (tuning fork), right, 0/8; left, 0/8; C_1, right, 1/12; left, 1/12. C_2, right, 3/24; left, 3/24. C_3, right, 18/36; left, 12/36. C_4, right, 6/48; left, 4/48. Weber not referred. Bone conduction, right, minus 10 sec.; left, minus 12 sec.

Caloric reactions: With the head upright, nystagmus occurred in three minutes when the right ear was irrigated, and five minutes when the left ear was irrigated. The vertigo was transitory and therefore the past pointing was not well defined. With the head back, nystagmus occurred in two minutes and forty seconds right, and four minutes left. Here again the vertigo was of short duration. On standing him up after the irrigation, he swayed but did not fall.

Turning tests: These bear out the caloric reactions. Head 30° forward. Ten turns right in 20 seconds. Nystagmus, duration 5 seconds. Ten turns left in 20 seconds. Nystagmus, duration 10 seconds. Ten turns right in 10 seconds. Past pointed only twice. Ten turns left in 10 seconds. Past pointed once with each arm Not marked either side. Head 120° forward. Five turns right in 10 seconds. Sways a little. No definite falling. Five turns left in 10 seconds. Sways a little. No definite falling. (Note) Vertigo of very short duration after each turning.

A medical examination disclosed nothing of value.

Laboratory findings: These are all negative and they include a negative blood Wassermann and a negative spinal fluid Wassermann.

In this case a definite involvement of both branches is shown. The hearing tests disclose a typical nerve deafness. The vestibular

tests also show a marked reduction of function. Both the caloric and turning tests bear out this statement.

Diagnosis: Bilateral neuritis of the eighth nerve, both vestibular and cochlear, of nicotine origin.

Case 8: History: This patient came in complaining of burning and smarting of the eyelids. He had chewed tobacco for forty-four years. Some dizzy spells, about twelve in number, were experienced a year ago. They were of very short duration. He has had none since. He has noticed recently, however, that his hearing is impaired. He has never had a discharging ear. The past medical history gives no information of value.

Physical finding: Male, white, age 61 years.

Eyes: He has a hyperopic astigmatism which has since been corrected with the proper glasses, together with his presbyopia. The other eye findings are negative.

Nose: No findings of importance.

Throat: Chronically diseased atrophic tonsils. Other findings negative.

Ears: Canals negative. Drums show no gross pathology. Whispered voice, right, 6 feet; left, 6 feet. C, right, 2/8; left, 2/8. C_1, right 6/12; left, 6/12. C_2, right 12/24; left, 12/24. C_3, right, 12/36; left, 12/36. C_4, right, 24/48; left, 3/48. Weber not referred. Bone conduction, right, minus 6 sec.; left, minus 6 sec.

Turning tests: Ten turns right in 20 seconds. Nystagmus, duration 20 seconds. Ten turns left in 20 seconds. Nystagmus, duration 18 seconds. Ten turns right in 10 seconds. Past points, right. Ten turns left in 10 seconds. Past points left. Head 120° forward. Five turns right in 10 seconds, sways right. Five turns left in 10 seconds, sways left.

Caloric reactions. Head 30° forward. Irrigation right ear, nystagmus occurred in 50 seconds. Irrigation left ear, nystagmus occurred in 45 seconds.

The medical examination disclosed nothing of value.

Laboratory findings: Blood count negative. Blood Wassermann negative. Spinal puncture and spinal Wassermann negative. Urine examination negative.

The vestibular tests in this case give rather paradoxical findings. The time of the after nystagmus was apparently shortened in the turning tests. However, nystagmus occurred altogether within normal time limits when the caloric test was used. If the duration of the after nystagmus in the turning tests was cut down, there would be a very noticeable lengthening of the time interval before nystag-

mus occurs in the caloric tests. This is true because in the turning test both canals are being stimulated, while in the caloric only one.

The writer believes there must have been some error in recording the time in the turning tests. Therefore he feels that the involvement in this case is primarily of the auditory branch with no demonstrable involvement of the vestibular branch.

It is felt that this auditory involvement is of nicotine origin in as much as there is no other demonstrable cause.

Diagnosis: Bilateral neuritis cochlear branch eighth nerve, of nicotine origin, late stage.

Case 9: The chief complaint in this case was that of deafness. He states that he first noticed a little impairment at about the age of 25 years. Neither ear has ever discharged. He smokes about twenty cigarettes a day and inhales all of them. He had pneumonia at the age of 15 and again at 21 years of age.

Physical findings: Male, white, age 55 years.

Eyes: Nothing of value.

Nose: Negative.

Throat: Chronically diseased atrophic tonsils.

Ears: Canals negative. Drums negative.

Whispered voice, right, loud only; left, loud only. Spoken voice, right, 2 feet; left, 2 feet. C, right, 1/8; left, 1/8. C_1, right 2/12; left, 2/12. C_2, right, 3/24; left, 3/24. C_3, right, 1/36; left, 1/36. C_4, right, 0/48; left, 0/48. Weber not referred. Bone conduction markedly diminished each ear.

Turning tests: Reacts normally in every way.

The medical examination gave no findings of importance.

Laboratory findings: Blood count negative, blood Wassermann negative. Spinal puncture and spinal Wassermann negative. Urine examination negative.

This is a classical case of auditory nerve deafness, with no demonstrable involvement of the vestibular branch. No other cause being demonstrable, it is believed that the cause is tobacco.

Diagnosis: Bilateral neuritis auditory branch of eighth nerve of nicotine origin.

Summary 1. The vestibular branch may be markedly involved with apparently little or no cochlear involvement as shown by Cases 1 and 2.

2. Vestibular irritation may occur with no gross cochlear change. This is apt to be the first sign of nerve involvement. Furthermore, irritation may occur without any impairment of nerve conduction. Cases 3, 4 and 5 illustrate these points.

3. Vestibular and cochlear involvement may occur concurrently as shown by Cases 6 and 7.

4. Cochlear involvement may be marked with no demonstrable lesion of the vestibular apparatus as shown by Cases 8 and 9.

5. Eight out of nine cases reported are in tobacco chewers. Therefore it would seem there is much more absorption from this form of the habit than in smoking.

CONCLUSION.

Cushny states that nicotine first stimulates and later paralyses the sympathetic nerve ganglia whether applied locally or injected into the circulation. He also brings out the fact that nicotine may cause medullary stimulation.

The logical point of attack then for a toxemia such as caused by excessive chewing of tobacco or smoking would seem to be the hair-cells of the organ of Corti, those of the maculae acusticae of the saccule and utricle, and those of the cristae acusticae in the ampullae of the canals. These cells connect with the ganglion of Corti, and Scarpa's ganglion, which are the peripheral ganglia of the auditory and vestibular branches respectively. Moreover, the processes of these ganglia (dendrites) connect with those of the hair-cells (axones). Therefore these ganglia could be affected by direct contiguity. They might even be affected independently, but this does seem improbable in as much as the endolymph is the most favorable medium for the absorption of a toxin, and the initial point of attack would naturally be the neuroepithelium, and then by direct extension the ganglia proper. It is true that medullary involvement may be also a factor, but this is highly improbable because no other cranial nerve involvement was demonstrated in any of the cases presented.

It is true furthermore, that occasionally one encounters a toxic lesion of the optic nerve caused by tobacco. DeSchweinitz states that he believes that he has observed a pure tobacco amblyopia. It seems, too, that in such cases the involvement is in the nerve itself. Hence, we have to consider a pure nerve involvement of the eighth nerve. Again this is highly improbable because the cochlear and vestibular branches are very intimately related before they enter the brain stem and it would be difficult to conceive of pathology involving the nerve trunk which did not involve both branches. Yet, the cases studied tend to show that one branch may be involved to more or less exclusion of the other.

It is indeed difficult to distinguish between a lesion of the end organs and of the nerve itself. The writer corresponded with

Dr. L. W. Dean relative to this point. He suggested the use of the galvanic test to make such a distinction. A letter was addressed to Dr. George W. Mackenzie asking for some reprints relative to the interpretation of the findings in this test. He replied that such were not immediately available and consequently the test was not used.

The question naturally arises, particularly in reference to Case 1, as to why vestibular involvement should be marked with little cochlear impairment. This is a very logical question in view of the hypothesis that the toxin attacks the neuroepithelium, and the peripheral ganglia. Why should it attack one group and not the other? The explanation given is that the hearing tests used are somewhat imperfect. Probably the most accurate instrument for the recording of hearing is the audiometer used in the clinic of Dr. L. W. Dean. By means of this instrument very accurate co-operation of the patient is obtained and the hearing may be graphically charted. In this way, certain imperfections of hearing may be demonstrated not observed with the ordinary tests in which there is such a large personal equation. If such a means of recording the hearing had been available, it is believed that Case 1 would have shown impairment of cochlear function not otherwise demonstrated.

It will be noted, also, that the cases showing vestibular irritation, and the word irritation is used with the meaning that there is no actual impairment of vestibular conduction, that there was in these cases too no apparent cochlear lesion. However in these cases there is an easy explanation. Nicotine in the early stages would stimulate the ganglia with a resultant vertigo. In such a stage of stimulation, there certainly would be no diminuition of hearing.

It is much more difficult to explain marked cochlear involvement without apparent disturbance of vestibular function as shown by Cases 8 and 9. The only explanation that can be offered is that the ganglion of Corti is somewhat more peripherally located than Scarpa's ganglion because the latter lies at the bottom of the internal auditory canal. This may be a factor. No other explanation can be offered by the writer. It should be noted that only in Case 1 was there marked vestibular involvement with little cochlear dysfunction.

Both ears were always more or less equally involved. This is an impressive argument for a toxemia such as an absorption of nicotine.

These cases show two things of value other than just the fact that tobacco may injure the eighth nerve. First, they show the value of routine ear examinations. The value of the vestibular tests in these

examinations is not to be discounted. They helped the writer very materially in the diagnosis of an early cerebellar tumor right, which was tentatively confirmed by Dr. Charles Frazier, of Philadelphia. He was also able to show by these tests in another recent case, that a right facial paralysis following a severe head injury, was peripheral. Vestibular conduction right was unimpaired. The seventh and eighth nerve are very intimately related in the internal auditory canal and near the brain stem. An intracranial lesion involving one would surely involve the other. A favorable prognosis was given which has since been justified by the patient's very rapid improvement.

They show in the second place, that the differential diagnosis of vertigo is really a problem of the ear man. Jones has made a splendid classification of vertigo, stating that every case may be included in one of five groups: 1, Middle ear lesions. 2, Intracranial lesions. 3, Ocular defects. 4, Cardiovascular disease. 5, Toxemia from any organ or focus.

The vestibular tests aid very materially in the proper grouping of a case. With the proper grouping, of course, comes the appropriate treatment and prognosis. Cases 3 and 5 particularly illustrate this point. A definite opinion was given following examination. The patients were instructed to discontinue to as great an extent as possible the chewing of tobacco. Within a few weeks after such advice, and the practical use of it by the patients, they had relief from their vertigo.

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Davis Hospital.

REPORT OF A CASE OF PNEUMO-MASTOID.

DR. LOUIS K. GUGGENHEIM, St. Louis.

Recurrence of inflammatory processes in the operated mastoid are not uncommon. Because of the previous exenteration and wide open antrum the extension of infection from the epipharynx to the tympanum and mastoid is easily understandable. Even in the presence of marked swelling and fluctuation in such a case, the presence of something other than an inflammatory process must be thought of, as the following case will demonstrate.

E. W., age 16 years, white, male, consulted me on June 27, 1924, because of pain in right ear. On June 23, 1924, patient had contracted a cold, which was followed the next day by pain in ear. The day before the examination the drum membrane had ruptured spontaneously.

The previous history included an O.M.P.A., right, in 1914.

Family history: mother died at 47 years of pulmonary tuberculosis. Two sisters died of the same malady.

Examination revealed the following: Drum membrane right, bulging in spite of the purulent discharge from spontaneous rupture. The left membrane was retracted. Hearing right, W.V. 12 feet, left 35 feet. Gingivitis, chronic tonsillitis, infected adenoid, purulent sinusitis (2nd series) right.

June 27, 1924: Myringotomy, right.

July 3, 1924: Myringtomy repeated.

July 8, 1924: Acute mastoid exenteration. Operation revealed a rather extensive necrosis of bone and much pus.

Thereafter patient made an uneventful recovery from the ear condition as well as from the sinusitis.

Aug. 18, 1924: Tonsillectomy and adenoidectomy. Following the tonsillectomy and adenoidectomy the patient was observed until Sept. 27, 1924, at which time he was discharged.

On Nov. 25, 1924, patient returned complaining of a cold and recurrence of ear trouble. Examination showed a negative right drum membrane, marked swelling over right mastoid, normal temperature and W.B.C., with slight tenderness on pressure over the swollen area. Distinct fluctuation was thought to have been felt. The absence of drum membrane change, the normal temperature,

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only slight tenderness on pressure made an unusual picture of recurrent mastoiditis; the swelling and "fluctuation", however, permitted of no logical alternative to surgical interference.

Under gas anesthesia an incision was made over the area of swelling. There followed a "pop" as air escaped. There was no pus nor, in fact, any sign of inflammatory change. The air cavity was found to be shut off from the antrum, the communication with which was re-established. Immediately air began to bubble in and out of the cavity in the mastoid. The re-establishing of the antral communication would probably better have been left undone but the search for the mechanism which had trapped the air in the mastoid reopened the antrum.

Conclusions: Had this case been left alone the trapped air would doubtless have been absorbed and most probably there would not have been a recurrence. With normal temperature and W.B.C., negative drum membrane, etc., in cases of apparent recurrence of mastoiditis, pneumomastoid should be kept in mind.

Concerning the mechanism at play in this case: the antrum doubtless communicated more or less freely with the mastoid cavity which had not as yet been obliterated by new bone formation.

A forceful blowing the nose probably inflated this cavity, distending the more or less elastic soft tissue covering. Evidently in the healing process there had resulted some sort of valve arrangement which did not permit the air to return from the mastoid. A careful search was made for such a valve but nothing of the kind could be found.

1000 Carleton Building.

TOTAL DESTRUCTION OF ESOPHAGUS BY NITRIC ACID.

DR. CLARENCE IDE, Long Beach, Cal.

Marian T., age 20 years, employed in a bakery, attempted suicide by ingesting nitric acid. Was attended for sixteen days by a local physician, then referred to the writer. Examination revealed that hypopharynx, palatoglossal pillars and tonsils had been corroded and were granulating. The epiglottis was ragged and granulating, vocal cords reddened, but not corroded. The left posterior naris had been burned by regurgitation of the fluid. Voice was only a whisper.

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Admitted to Good Samaritan Hospital, Los Angeles, Oct. 14, 1912. In consultation it was decided to delay somewhat in passing the esophagoscope, as it was thought that not much of the acid had passed below the fauces, and that anesthetization of the introitus of the gullet would enable the patient to swallow liquid nourishment.

Local applications consisting of I and KI in glycerin, or 25 per cent argyrol, or 10 per cent ichthyol in glycerin were made on Oct. 15 and 16, after cleansing with hydrogen peroxid.

Oct. 16, the glottis was cocainized and the patient encouraged to swallow milk. She failed. Attempt was now made to pass the esophagoscope. Failure resulting, a low tracheotomy was done under ether, and the anesthesia continued through the wound. When the bronchoscope reached the level of the heart the pericardium could be seen bulging in front of its lumen, at each pulsation of that organ. The esophagus could not be passed, so the ether was continued by insufflation through the tracheotomy tube, and a general surgeon in waiting performed a gastrostomy. Then the patient was fed while in the hospital, and self-feeding was continued after discharge.

Some months later the girl suffered a double lobar pneumonia, fell into the hands of a Christian Sciene practitioner for treatment, and died. We then obtained consent for a necropsy, finding that the esophagus had been completely destroyed, the trachea resting against the vertebral column. It was also found that the general surgeon had inadvertently performed a duodenostomy rather than a gastrostomy, which explained why the patient had always complained that all nourishment taken by the gastrostomy tube distressed her.

This is a retrospect. With the present development of endoscopy it is possible that a case of this character would be handled differently. The absence of the esophagus might be discovered at once, and the gastrostomy done sooner. However, there was only a two days delay after the case fell into our hands, during which time the rectal drip was employed to combat acidosis.

The girl did well after discharge up to the time of the pneumonia attack.

At least it can be said that the motto, *non nocere,* was adhered to and also that an immediately fatal issue was averted by a "masterly inactivity", which allowed the *vis medicatrix naturae* to heal the damage.

917 Security Bldg.

PHILADELPHIA LARYNGOLOGICAL SOCIETY.

Meeting of April, 1925.

(Continued from page 734, September issue.)

One thing which Dr. Miller stresses as most desirable, namely an X-ray study of the size of the optic foramen, seems to me, except for the complete study of the case, not quite so necessary. In 1912, Dr. George E. Pfahler while taking oblique pictures of the sinuses found the optic foramen quite clearly shown on the plates, but has not seen any useful thing come from this knowledge in inflammatory conditions of the optic nerve. Should there be a growth, as in VanderHoevl's case reported in the February issue of the *American Journal of Ophthalmology*, which cannot be removed and where a decompression of the foramen was done with temporarily good results such studies have a practical purpose, but in a neuritis where the swelling will subside with the removal of the cause, but little of real value is to be gained, as a foramen which was large enough for the nerve before the inflammation will presumably be large enough for it after the swelling has subsided.

The two most frequent field changes in retrobulbar neuritis are enlargement of the blind spot and a central scotoma at first relative for colors only and later becoming absolute. This field change occurs in retrobulbar neuritis from any cause but enlargement of the blind spot is found much more frequently in sphenoidal or ethmoidal disease.

In my experience the only reliable treatment is some form of operative interference. Suction except for diagnostic purposes has been only a temporizing measure and operation was the final requirement, and in only one case, a bilateral one from ethmoid disease, has operation failed to produce a return to normal. In this case the vision of the left eye is but 5/15 with a persistent relative central scotoma, though she has been under observation and treatment for ten months.

I gravely doubt that these cases return to normal spontaneously and remain so permanently. As Dr. Miller says, the vision does fluctuate and I believe a later loss is probable unless aeration and drainage are established.

Dr. G. M. Coates has called our attention to the fact that high deviations of the septum seriously interfere with drainage of the posterior ethmoid cells in many cases and in others cause a lack of ventilation which, according to White is all that is needed to produce optic nerve pathology. We all of us realize now-a-days that this is true and we see many cases of optic nerve blindness apparently caused by this narrowing of the superior meatus with no other pathology discoverable.

Furthermore, when we operate upon these cases and improve conditions for ventilation and drainage many of our cases recover vision. Conversely, however, the problem is different. We all of us in our nasal examinations see countless high deviations and choked superior meati without any suspicion of eye trouble. I believe that these are the cases classified by Leon White as having large optic canals where the nerve is not so easily compressible. I would like to ask Dr. Miller what he thinks about this point and why we do not have more optic nerve disease than we do considering the frequency of nasal pathological conditions.

In a case of my own recently, one of acute suppurative frontal sinusitis from out of town, the patient presented himself with evident signs of meningitis, a high cell count in the cerebral spinal fluid but no bacteria, stiff neck and Kernig's signs, Jacksonian type convulsions on the opposite side followed by some paresis of the hand and ankle. There was mental dullness and beginning papilledema. After a thorough

external cleaning out of the frontal sinus, where no erosion of the inner table was found, all symptoms cleared up except a double choked disc of 1 to 2 diopters. The ophthalmologist thinks that this denotes pressure behind the chiasm. I would like to ask Dr. Miller whether he thinks this opinion is correct or whether coincident disease of the sphenoethmoid group of cells would be likely to be a factor.

DR. ROSS HALL SKILLERN: The methods of involvements would appear as follows: 1. Direct extension of the infection. 2. Focal infection with production of toxins. 3. Hyperplasia.

I have seen many of these cases, and I am more convinced daily that they are caused by the toxicity, rather than by the extension of the infection. In percentages, I should say, toxicity 90 per cent, hyperplasia 9.9 per cent, and direct extension of infection .1 of 1 per cent. The old writers put direct extension 100 per cent, but they did not appreciate any other possibility. Suppose you operate and find apparently nothing, and then after a few days discover pus. This is not infection, just caused, but the old infection turned into another form of infection. The same is true of a cold in the head, the first day it is dry and then gradually it becomes moist and then purulent. If a retrobulbar condition is diagnosed, no time should be lost in operating, of course taking it for granted that a skillful man performs the operation. The more advanced the condition of optic involvement is, the longer the time it takes to recover.

DR. BRUMM: I want to thank Dr. Miller for his timely paper. This is a subject which I feel has not been presented in a clarified manner, and one which I think it not familiar to, too many rhinologists. First of all, I agree with Dr. Langdon that these cases should be operated upon immediately. First because sight is a function which is most necessary to our economy. Secondly, there is a very rapid loss of function in these cases; and thirdly, I am very dubious as to local treatment controlling these eye situations. I believe that the important factor in these cases is a mechanical one, as we remember very well the case of Slutter, where the patient's sight returned during the operation. Also the cases of Bordley, where the sight returned a few hours after operating. Like experiences in my own practice.

It seems to me that if the word optic neuritis is used in the true sense there would be round cell infiltration, influx of white cells and possibly an increase in the connected tissues which pathological picture could not clear up in a few hours time. I do believe there is a low grade hyperplastic sinusitis causing a complete blockage or pressure on the lympathic and vasculatory system of the sinuses and eye which in turn causes a pressure of the minute vessels supplying the optic nerve and other eye structures. Because of the intimacy of the canals of Harve and Volkeman with the eye lymphatics we can readily see how this condition could be brought about. There is a symptom which I used in these cases, namely optic neuritis or uveitis, associated with marked corneal and conjunctival injection. I have noticed a complete paling to be brought about during the preparation of cocainization before I operated upon these patients or during my preliminary examination.

It is very interesting to take a 10 per cent cocain solution of 1 to 1000 adrenalin applied by cotton pledgets to the middle turbinate and meatus and having your patient wait one-half to one hour in your office and to note the marked subsidence of the ocular congestion.

This is another proof, to my mind, that we are dealing principally with a mechanical condition and that we possibly should use the word optic compression rather than the word optic neuritis.

DR. B. H. SHUSTER: Dr. Skillern mentions the appearance of pus only after the operation on the sphenoid sinus. A case I had recently illustrates, I believe, the pathology which takes place in such a sinus. My case was that of a cervical adentitis and the pathology could be easily observed in the various stages. The large swelling in the neck and about the mastoid process complicated by an acute otitis media

made me very suspicious of mastoiditis with a possible perforation at the tip. I incised the swelling with the idea of doing a mastoidectomy if there were any indications present. I expected to find a great deal of free pus in the tissues of the neck. To my surprise I found the mastoid process normal in appearance and could not find any free pus after thorough search in the tissues of the neck. I merely made several incisions in the swelling, established through and through drainage, dressed it with wet dressing and waited for further development. Her symptoms of pain fever were gradually improving but very little and the dressings for the next three or four days merely showed drainage of serum. At about the fifth day the patient seemed much brighter and improved a great deal generally, the temperature having come down to normal. This time when I dressed the patient I found free pus on the dressings and the swelling down considerably. It was striking to find the transformation of serous exudate into pus to be concomittant with the improvement of the patient. It was not concealed and previously undiscovered pus because the tissues were deeply and thoroughly searched at the operation.

It appears to me that a similar state exists in the tissues of the sphenoid sinus when it is first opened and no pus obtained, but with the establishment of ventilation and drainage, improvement takes place and the previously edematous mucous membrane begins to deplete its water content and the transformation into pus. If the pus in the sinus as well as in the above case cited were due to infection at the operation, I do not believe that the improvement in the symptoms would appear together with the appearance of pus. I would rather expect aggravation of the symptoms than improvement.

DR. MILLER in closing: I am very much obliged to you, gentlemen, for your discussion.

Dr. Langdon speaks of neuritis and retrobulbar conditions. Retrobulbar is the most common. Dr. Coates spoke of choked discs. I have never been able to find the difference between papillemedia and papillomas and choked discs.

I believe that there is a mechanical factor where there is inflammation between the retina and the optic nerve.

Dr. Skillern speaks of toxicity in 90 per cent, it is the cause of all retrobulbar cases. Hyperplasia 9.9 per cent is also caused by toxicity. We have to get at these conditions quickly, because the longer they go the harder it is to get them better.

Dr. Coates asks if the high deviation of the septum is so frequent why are optic conditions not as frequent. This questions cannot be answered at the present time. In Dr. Coates' case, I would beg for a sphenoid ethmoid operation. I do not see how a frontal lobe abscess would cause that.

Dr. Langdon spoke of tonsils as a factor. I have had two cases where teeth were the cause. I have gotten away from the fact that the tonsils and sinuses are not the only etiological factors. The teeth, gall bladder and appendix may also be causative factors.

Meeting of May 5, 1925.

Paper: **Report of Two Cases of Chronic Frontal Sinusitis.** Dr. George L. Whelan.

DISCUSSION.

DR. G. W. MACKENZIE: I enjoyed Dr. Whelan's paper very much. I can readily see how intracranial complications can occur in the course of suppurative inflammation of the ethmoidal as well as the frontal sinuses. I have seen a few such cases in consultation and have operated a few with variable results, some successful and some not. I am pleased to note that Dr. Whelan saw fit to have a Wassermann test made in both cases. This, I think, is very important. I recall a case in which I neglected to have a Wassermann test made early in the

presence of pansinusitis on the right side, in a married man, who gave us a negative history and had three healthy children, the youngest about fifteen months old. In this case because of a very severe multiple neuritis, I operated the sinuses radically, externally and at the same time removed the tonsils. The results were not very satisfactory until a few weeks after the operation, the patient's Wassermann was found to be 4 plus. Following specific treatment for the syphilis the patient showed decided improvement, the neuritis disappeared entirely and the color of the patient improved. Four weeks after the administration of antiluetic treatment the patient had gained forty pounds in weight, so that I have come to consider that in every case of suppuration that behaves atypically, a careful search for syphilis should be made.

DR. G. L. WHELAN in closing: Post-mortem examination revealed the frontal sinuses intact, there was no evidence that the brain had been entered through operative procedures. On removing the roofs of the ethmoids pus of the same character as that found over the frontal lobes was disclosed. Frontal sinusitis would seem to be the most likely cause in this case and probably is a more common causative factor than ethmoidal involvement.

However, frontal lobe abscess following ethmoidal involvement is quite possible and does occur, as disclosed by the autopsy findings in this case.

Paper: **Sublingual Tonsillar Abscess. Lingual Quinsy.** Dr. Margaret F. Butler.

DR. HITSCHLER: I should like to ask Dr. Butler in what position her patient was sitting when she made the incision.

DR. H. COHEN: In 1917, I wrote a paper on the lingual tonsil. I only wrote this paper to emphasize the lack of examination of the base of the tongue and the lack of use of the laryngeal mirror. I have made it a routine practice to examine the base of the tongue.

All these cases of sublingual abscess show the same signs of swelling redness and fluctuation, tenderness, etc. Of course, drainage is not very favorable in these cases and so they should be followed and cared for. If we are more careful in our examination, we will find more sublingual abscesses.

DR. M. F. BUTLER in closing: The patient was sitting on a chair with the body in a forward position when the incision was made. His systemic condition was good. He worked a few days after the operation.

Dr. Cohen has been very fortunate to have had so many of these cases.

Abstract: **Agranulocytic Angina. Report of a Case with Two Attacks.** Dr. Henry S. Weider and Dr. Joseph A. Moore.

About fifteen cases of a diseased process known as agranulocytic angina have come to light within the last few years. The disease is characterized by: its occurrence in middle-aged females; ulcerative-necrotic processes of the throat and mouth, particularly the tonsils, less often the genitalia, gastrointestinal tract, and the skin; high fever; a marked leucopenia with diminution or absence of the neutrophiles; negative or indifferent bacteriologic findings; absence of the granular cells and myelocytes from the bone-marrow, and in the hitherto reported cases an invariably fatal outcome.

The authors report a case taking it to be one of this disease, and believing that it is the first on record where a patient recovered from an attack.

Abbreviated case history follows: Julia M., age 42 years, married, weight 150 pounds, was taken ill Dec. 12, 1922, with pains and soreness of the gums, temperature 99-100° F. Tonsils became covered with an exudate which resembled diphtheria, 10,000 units of diphtheria antitoxin were given; slight result. Smears showed Vincent's organisms, no diphtheria. Leucocyte count 1200, polys. 20 per cent, lymphocytes 80 per cent, reds and hemoglobin normal. Blood cultures negative, Widal negative. Whitish, tenacious exudate appeared in placques on the gums.

Ulceration of the vulva. Temperature rose to 104° F. X-rays of sinuses, teeth and chest negative, except one tooth, which seemed to be infected. This was removed under gas anesthesia. Heart and lungs negative. Liver and spleen not palpable. Exanthem. No jaundice noticeable. After fever of forty days duration with constant leucopenia and low polys the white count rose to 7000 with 60 per cent polys., at this time there was general marked improvement. The fever gradually came down, the patient got about. A blood count made several months later showed a normal white and differential count as well as red and hemoglobin.

Second attack: Dec. 21, 1924, patient exhausted and worried from attending a sick sister, was taken ill with headache and sciatic neuritis and nervousness. With sedatives and rest in bed and increased feeding, patient began to improve. There were no throat or mouth symptoms and no fever. On receiving news of the death of relative, patient became worse. Pains returned (back and leg). She also complained of pain in the jaw; a gland at the angle was found moderately enlarged. Mouth and throat were negative. On Jan. 11, 1925, temperature 100° F. Throat still negative. Jan. 12, patient felt very ill. January 13, severe headache and constant nausea. Temperature rose to 105.° Jan. 14, headache unbearable. Temperature 105° F. Slight ulcers and exudate of the right tonsil, opaque white spots on lower gum. White count 3000; 5 per cent polys.; 95 per cent lymphocytes. Cultures from the mouth and tonsils showed stayphylococci. Widal negative. Patient's temperature remained high. Mind was clear throughout. Circulation markedly affected. Jan. 15, patient died in the morning. No autopsy.

Angranulocytic angina is to be distinguished from aplastic anemia, aleukemic leukemia, monocytic angina, septic processes, leukemia under the influence of radiation treatment. The occurrence in middle-aged females; the absence of pallor, of marked anemia; no hemorrhagic tendencies, and normal platlet count speak for agranulocytic angina. Treatment has apparently been unavailing; measures which were used in our case in the first attack were used in other cases and did not prevent the fatal outcome.

Dr. Henry S. Wieder: This is a most striking condition. The fact that you make a diagnosis in one case does not guarantee that you will not miss the next one. We are all so accustomed to treating anginas of all grades of severity that run their course without complications that we rarely think it necessary to take a blood count and without that this condition can never be diagnosed.

During this patient's first attack we had no thought that we were dealing with a new syndrome or entity. The first report on this condition in the English language appeared only last year and the second report only after this patient's death. Our patient showed many of the characteristics of the disease but not in such severe form as most of the reported cases. She showed the throat symptoms in mild degree, but the typical swelling of the gland at the angle of the jaw was present and, what is more important, the absolute prostration and lack of resistance characteristic of all these cases. In fact, the condition probably starts as one of decreased resistance and vitally complicated by some form of throat infection against which there is no defense.

The most important feature of our case is the fact that she is the first case on record to recover completely from one attack despite the fact that she succumbed to a second one. That fact offers the hope that if we took blood counts on our angina cases we might discover more cases in their earliest stages and might discover some therapeutic measure capable of increasing the resistance. Since the two cases reported in the *J. A. M. A.* two cases have been reported in Toronto and one has been seen in Chester.

Dr. J. A. Moore in closing: I wish to emphasize that the most discernible cases are the typical ones. We have had experience with a good many leucocytes, but have not had experience with anything as low as this.

THE NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

May 27, 1925.

Presentation of Asch Instruments to the New York Academy of Medicine Section on Laryngology. Dr. Emil Mayer (presentation made by Dr. Julius Auerbach.

Mr. Chairman and members of the Section:

I regret that the continued illness of Dr. Emil Mayer prevents him from making personal presentation of the original instruments devised, made for and successfully used by Dr. Morris J. Asch for the operation for the cure of deviations of the nasal septum.

When Dr. Asch died in October of 1902, these instruments were given with his medical library to Dr. Mayer.

At that time the Asch operation had become the most popular method for the relief of the deformity caused by deflections of the nasal septum.

Believing that some day these instruments would have historical as well as sentimental value, Dr. Mayer had a die made of the name of "Asch" and had each instrument stamped with that name. Since then they have been continuously in Dr. Mayer's possession, so that there is no doubt of their originality. Provision was made for their eventual presentation to the New York Academy of Medicine from Dr. Mayer's estate, but, acting on the advice of colleagues to whom this intention was mentioned, Dr. Mayer decided to present them himself, asking that they be placed among the other original instruments possessed by the Academy and thus kept forever as an evidence of American ingenuity and a memento of the late Dr. Asch.

Permit me to present briefly the origin of the method and the devising of the instruments.

It occurred to Dr. Asch that the deviation of the cartilaginous septum was like that of a rubber ball and due entirely to the resiliency of the cartilage.

If either were pressed the bend would be corrected, but would spring back as soon as pressure ceased. It became necessary to overcome that resiliency and this he felt could be done by a crucial incision, bending over the flaps and keeping them thus bent until the overriding flaps were well knit. The holding of the position was accomplished by vulcanite tubes.

The incisions should be made in the same relative position and cross at as near a right angle as possible. Powerful compressors made the flaps overlie.

Dr. Asch was an accomplished draughtsman and the instrument maker readily followed the drawings.

The first cutting instrument made was made with a scissors handle and was found to be too weak in the handle. This instrument is among the perfected ones and is the only one of its kind in existence.

The completed instruments in this collection consist of separators to break up incisions, cutting instruments, rectangular and straight, right and left and the compression forceps.

I trust that you will accept these instruments and keep them as a memorial of Dr. Asch, a loyal member of this Academy, an accomplished surgeon, and who helped do his share toward the relief of suffering humanity.

DR. FREUDENTHAL, acting Chairman, said that he was still using one of Dr. Asch's instruments, and asked that Dr. Auerbach convey to Dr. Mayer the thanks and appreciation of the Section and wishes for his recovery.

Auto Irrigation of the Bronchus. Dr. Sidney Yankauer.

The patient, a young man in apparent good health, had suffered from lung suppuration, and after about three years of irrigation treatment had so far improved that he required now very few irrigations. Recently there was more secretion than usual and he returned for more irrigation. During this time the patient had learned to wash out his own bronchi whenever he was suffering from more secretion than usual. He would take water in his mouth, aspirate it into his lung, and then throw himself over a table and eject it.

Dr. Yankauer said it was such an unusual procedure that he thought the members would be interested to see it. The patient then demonstrated the procedure.

DISCUSSION.

DR. FREUDENTHAL said that evidently the young man had gotten his epiglottis under control and was able to raise it at will.

DR. HELLER said he had asked the young man how he had acquired this knack, and he had replied that for a long time he had been able to stick his fingers in his mouth and get down behind his epiglottis, so that as Dr. Freundenthal had remarked the patient had evidently a tremendous control over his epiglottis.

Chronic Polypoid Sinusitis in Mother and Son. Dr. Irving Wilson Voorhees.

Mrs. F. K., age 47 years, made her first visit to the Manhattan Eye, Ear and Throat Hospital on June 2, 1923. Examination disclosed complete obstruction of the nose by polypi. There was considerable headache and nasal discharge, both of which had been increasing for some months. X-ray examination by Dr. F. M. Law: "Both frontals are extremely large and deep. All sinuses show severe involvement. Diagnosis, chronic polypoid sinusitis."

On June 18, 1923, I did a partial double ethmoidectomy, but had to stop the operation because of excessive bleeding. Again on June 30 further ethmoid work was done and many polypi were removed, but with little impression upon the nasal interior. On Dec. 1, 1924, a radical Killian was performed on the *left* side, including a radical Caldwell-Luc. The sphenoid was curetted. There was much improvement in the patient's condition after this operation and she reported a return of the sense of smell, which had not been present for a long time. On Dec. 31 more polypi were removed from the *right* side, under local anesthesia in the clinic. Nothing further was done until Feb. 4, 1925, when a right Killian and ethmoid was done. The right sphenoid was also entered and curetted at this time. The patient is still in need of a radical operation on the right antrum. Recently there was a recurrence of polypi in the left nasofrontal duct region. These were curetted, and the nose is now quite free.

M. K., the son of this patient, age 20 years, first came to the Manhattan Aug. 8, 1922, showing a chronic polypoid sinusitis similar in every respect to the condition found in his mother. For something over two years he made occasional visits to the hospital, when a few polypi were removed, but nothing definite was undertaken. On Mar. 13, 1925, X-ray examination showed "Both frontals large and deep, with severe involvement. Both ethmoids are severely involved, also the left antrum. The right antrum and the sphenoids show moderate involvement only."

On Apr. 8, 1925, I did a submucous resection of the nasal septum and removed several polypi but it made no impression on the nasal obstruction. It is now planned to do an intranasal double ethmoidectomy, followed by a double radical Killian operation. Radical operations on both antra will be carried out, under local anesthesia, after the frontal condition has cleared.

These two patients are presented to this Section for their clinical interest. It seems hardly likely that heredity plays any role in such a condition, but it would be interesting to have the opinions of the gen-

tlemen present as to the probable cause of an almost identical condition in the two patients. It is generally accepted that polypi grow out from diseased bone areas and represent an attempt on the part of nature to overcome an infection of bone and periosteum. At any rate, in such cases as these, simple removal of polypi by the intranasal route is quite insufficient to effect a cure. During the operation on Mrs. K., the frontal bone was found to be considerably thinned, and when it was removed polypi projected into the wound as if under pressure. It will be interesting to see if a like condition is found when we perform the radical frontal operation on the son.

Cyst Removed from Nasal Septum. Dr. George D. Wolf.

The patient, a man age 49 years, came to the office about three months ago with the history that for the past ten years he had had difficulty in breathing through the nose; he could inspire but not expire. Examination showed a mild inflammation of the septum to the left, and a growth on its posterior margin about the size of a nut hanging down on a pedicle in the rhinopharynx. It looked like a fibroma, but after cutting the pedicle while pulling on the tumor with forceps the capsule broke and it became evident that the condition was a mucous cyst. The specimen was preserved and had a mucous membrane lining and capsule. Another interesting point in connection with the case was that the patient presented a great deal of crusts, in spite of the fact that there was no atrophy present. Examination of the urine showed 7 per cent sugar; this was taken care of and the crust formation had markedly improved.

Coin Removed from Esophagus. Dr. George D. Wolf.

The child, which was a year old, was brought by the mother on Apr. 24 for examination, with the history that for the past five weeks it had experienced great difficulty in taking soft or solid food. They had missed a dime in the house, but did not know that the child had swallowed it. The mother, however, had a faint suspicion that this was what had happened, and took the child to a man in the neighborhood who did so-called X-ray work, and he made a picture. She then took the child to an institution where they tried to get rid of the coin by pushing it down, but not succeeding, the mother took the child home again after five days.

While it was more or less obvious that the coin was in the esophagus, it was thought best to take another picture after giving the child a bismuth meal. It was then kept on plain water for 24 hours, and the next day with the aid of a Jackson anterior commissure laryngoscope the coin was removed without difficulty.

The interesting features of the case were that the child apparently had not suffered much and looked fairly comfortable, the mother practically made the diagnosis herself. The child did not suffer much from the whole performance and as soon as the coin was removed fell asleep and has been fairly well ever since.

Paper: **Intermittent Protrusion of the Right Eye.** Dr. Saul J. Selkin, New York.

(*Published in October issue of* THE LARYNGOSCOPE.)

DISCUSSION.

DR. MARK J. GOTTLIEB said he had happened to have seen a case which might be of some help. Some years ago a young lady came into the office with a protruding eye and the veins under the skin of the eyelids stood out very prominently. After quite a long examination and consultation, it was decided to do a radical Killian operation on account of some ethmoid disease that she had and feeling that by the ordinary method of operation one could not reach the cells that were either underneath the frontal sinus or in the sphenoidal fissure, and were probably the cause of the trouble. Operation under general anesthesia revealed a great deal of necrosis of the floor of the anterior cranial fossa, and after the operation the swelling went down.

DR. JOHN GUTTMAN said he understood that no diagnosis had been made on the case. Why might it not be a case of tumor of the orbit?

Judging from the X-ray pictures as described, there seem to be some changes in the base of the skull, especially in the sella turcica. A tumor in the orbit might explain the condition.

Paper: **The Significance and Prevention of Blindness Due to Intranasal Disease.** Dr. Mark J. Gottlieb.

Published in this Issue of THE LARYNGOSCOPE

Paper: **The Bronchoscopic Treatment of Lung Suppuration With Special Reference to the Post-Tonsillectomy Type.** Dr. M. C. Myerson. (*To appear in a subsequent issue of* THE LARYNGOSCOPE.)

DISCUSSION.

DR. JAMES ALEXANDER MILLER: I feel a little out of place in this company, but perhaps the point of view of an internist may be helpful. As Dr. Myerson has well brought out, co-operation between representatives of different fields of medicine is becoming more important and nowhere more so than in the field of lung abscess.

In association with Dr. Adrian V. S. Lambert, I am about to publish our experiences with one hundred cases of lung abscess treated over a period of the last three years. We believe that rest and postural drainage is the fundamental procedure. Bronchoscopy is a real help as an aid to drainage in certain cases, but eventually about 40 per cent of our cases have come to operation.

It takes a good deal of judgment to decide just when rest and postural drainage alone is not sufficient and for that purpose we have frequent consultations which bring in the bronchoscopist, the surgeon and the internist together, and if prompt drainage is not being established we recommend bronchoscopy to aid us. When this procedure has continued over a period of several weeks and the abscess is not clearing up, the case is again considered from the point of view of more radical operation. I feel a good many cases are treated by bronchoscopists too long and drift into a chronic condition which is very difficult to cure by any method of treatment.

We now never operate on acute cases but, on the other hand, we try to operate soon enough to offer a chance of cure; that is, before the wall of the abscess has become so thick that a cure by operation is impossible.

From 12 to 15 per cent of our cases were post-tonsillectomy abscesses. Too much emphasis cannot be placed upon the responsibility of the operating surgeon, both in making sure of the condition of the lungs before the tonsils are removed, and, secondly, to follow up the case long enough to make sure that an abscess is not resulting. As Dr. Myerson has well brought out, an abscess may develop anywhere from four or five days to three weeks after the tonsillectomy. Beginning symptoms are often insidious and if the surgeon has not followed up the case with the possibility of abscess in mind, the diagnosis is frequently delayed for many weeks, and as an early diagnosis is very important from the standpoint of treatment, for the earlier the treatment is begun the more likely is a successful cure.

In closing, I wish to express my appreciation of Dr. Myerson's contribution to this important subject and to urge with him that we approach the treatment of lung abscess with no prejudice in favor of any one particular method of treatment, but endeavor to study our cases individually and apply to each whatever method seems indicated. There is no class of cases in which frequent consultations between the physician, surgeon and bronchoscopist is more necessary, and personally I feel that the opportunities which I have had for such studies have been as valuable as any in my experience in the practice of medicine.

DR. HELLER said that Dr. Myerson in speaking of the etiology of this condition had brought up one important point, *i. e.*, he had bronchoscoped two to three hundred cases where more or less blood had entered the bronchial tree, and none had lung abscess. That shows that blood itself, even if it enters the lung, is not the cause of lung abscess. Hemorrhage is very common in pulmonary tuberculosis, but lung abscess is comparatively rare.

In his opinion, the condition was not due to the tonsils, and one should say post-adenectomy abscess rather than post-tonsillectomy. The majority of the men who take out the tonsils are not beginners. These abscesses have occurred with the best men in the practice of surgery, and they do the operation well, they take the tonsil out whole, not in pieces; but that is not true of the adenoids, which are taken out in pieces. First with the forceps, and then with the curette, and the naso-pharynx is scraped. No one can tell how much of the adenoid comes out in the curette and how much slips down in the lung. It is easy to see how the adenoid tissue stays in the lung; it is not sterile, and it acts as a plug. Dr. Heller said he was firmly convinced that these bits of adenoids are the cause of what is called post-tonsillectomy lung abscesses, and that if the men would be more careful in doing adenectomies there would be fewer abscesses. As for himself, he is more careful in taking out the adenoids than in taking out the tonsils. If one takes out only part of the tonsil, the rest stays in place; it is adherent and can be taken out any time; but in taking out the adenoids some of it remains loose, and when the patient comes out of the anesthetic he can easily aspirate the adenoid tissue.

DR. MYERSON expressed his indebtedness to Dr. Yankauer, first, for introducing the method of treatment and the pioneer work which had stimulated himself and others in this country to carry on and study it further; and also for what he had just said in stressing the value of prophylaxis in the matter of tonsillectomy. He intended to revise his paper before publication to lay more emphasis on that phase of the subject.

Dr. Miller's remarks were valuable. All would agree with him that co-operation in the hospitals was essential to any good work. Unfortunately that is too rare; there are too few general hospitals where one sees it, but there is no question that a combination of three or four different men working in different fields and concentrating on one subject will produce better results.

The internists say that "cases cure spontaneously; why advocate bronchoscopy?" Dr. Myerson said it has been his habit to meet them half way, and to propose that they study the case closely for say six weeks and then if the patient is not progressing favorably, to turn him over to see if bronchoscopy will not do what watchful waiting has failed to accomplish; if after a fair trial bronchoscopy should fail, then pneumothorax surgery should be considered.

The location of any acute inflammatory process is very important. Dr. Miller had laid emphasis on that.

The question of the hypothesis laid down in a previous paper, concerning the presence of a pre-existing pathology in the lung which indicated an area of non-expulsion was not proven by any means, but he was now trying to prove it by some animal experiments and was not having a very easy time of it.

Dr. Myerson said he did not quite agree with Dr. Heller in regard to adenoids as the main factor in the pulmonary abscess. It would take too long to explain his opinion in this view. The majority of adults who are operated upon under general anesthesia, however, do not have adenoids removed, yet we do hear of adults operated upon under general anesthesia having lung abscesses. That was only one argument, and there were others.

Two Molars Erupting Into Antrum. Dr. Sidney Yankauer.

The patient, a girl, age 18 years, applied last February for treatment for nose bleed. Examination showed no cause for it, excepting a small ulcer of the septum. The ulcer was cauterized, but the bleeding continued. A week later she returned complaining of pain in the region of the right upper molar. Examination showed a swelling, which was diagnosed as an ordinary gumboil. The dentist opened this, taking it for an ordinary abscess, but it evacuated a clear fluid. X-ray pictures were then taken and showed a very remarkable condition.

(Dr. Yankauer then demonstrated the X-ray pictures, showing two molar teeth in the right antrum, apparently hanging from the roof.)

Under general anesthesia, an incision was made under the lip and a large part of the antral wall was removed. The most anterior tooth was found very easily.

The mucous membrane was separated from the tooth and it was extracted without difficulty. The roots were three in number, but were short and stumpy. Then the second molar was then searched for. There was some secretion at one point of the mucous membrane and a piece of bone was protruding from a small perforation. The second molar tooth was found behind the perforation; it had not quite erupted but was contained in a cyst. The walls of the cyst were removed, and the tooth was extracted. Then a large opening was made into the nose, the wound being sewed up. After the packing was removed, there was a profuse discharge from the antrum, and this continued in spite of daily irrigations, until the antrum was washed out and injected with 1 per cent mercurochrome solution. After that the pus cleared up entirely, the antrum made a satisfactory healing, and today the patient has entirely recovered.

DR. YANKAUER said that the very interesting cases and report presented by Dr. Myerson brought up the subject of post-tonsillectomy lung abscess once more, and he wished to take this opportunity to again emphasize the importance of prophylactic treatment of lung abscess, which means that in adults tonsillectomy should never be done under general, but always under local anesthesia. It can be done without pain and almost without discomfort under local anesthesia. General anesthesia should be considered as absolutely contraindicated in tonsillectomy upon adults. It is true that cases of lung abscess do not occur very often, but it is not only the lung abscesses which come after these cases, but in addition one should consider the cases in which the patient has an aspiration pneumonia and a beginning lung abscess which gets well spontaneously, yet which keeps the patient sick for weeks. The actual percentage of lung abscesses following adult tonsillectomy under general anesthesia is difficult to estimate, for not all the cases are recognized as such, as the symptoms do not begin for ten days or two weeks afterward and are ascribed to a cold or some other cause. The patient is said to have a pneumonia, and the connection with the tonsillectomy is overlooked. It may be that the accident is not such a common one, but when one considers the severity of the disease and the awful condition of the patients, a pest to themselves and friends, who lose their positions because of the vile odor that comes from them, etc., it makes the matter a very important one.

Dr. Yankauer then said he would like to report two cases that showed the opposite point of view.

These patients were suspected to have lung abscess; one seemed such a clear case that it was operated upon by a surgeon without a preliminary diagnostic bronchoscopic examination, and the patient died. At autopsy, a foreign body was found in the lung, which was the cause of the abscess. Subsequently it was found that the patient had a slight cough, which was ascribed to the tonsils. The anesthesia irritated the foreign body and the mucosa surrounding it, and the patient developed a lung abscess.

The other case had been reported before. A patient with a clear case of post-tonsillectomy lung abscess was presented for diagnostic bronchoscopy before operation. A foreign body was found at the site of the lung abscess, and was removed, proving to be a bit of bone. The patient was asked about the origin of this foreign body, but she denied any knowledge of any accident. She was then asked about the tonsillectomy, and she stated that her nose had been operated upon at the same time. Examination of the nose showed that a portion of the lower turbinate was missing, and on looking again at the bone it proved to be the missing bit of turbinate. It was aspirated and caused the abscess which was taken for a post-tonsillectomy lung abscess.

In another case caused by tonsillectomy, a child suffered from attacks of dyspnea, which for eight weeks were diagnosed as asthma. An X-ray picture showed a foreign body in the bronchial tree, which was removed by bronchoscopy and proved to be a small piece of rubber tubing, of the size and type used for intranasal anesthesia. There seemed to be no doubt that this patient had been given intranasal anesthesia. The rubber tubing was too far down in the throat and was caught in the snare, and the patient inhaled it.

We must realize that every case of this kind should be bronchoscoped for diagnosis before it is operated upon, and this lesson should be thoroughly impressed. Most of the thoracic surgeons now recognize the importance of a bronchoscopic examination in every case of intrathoracic surgery.

As to the treatment of these cases with the bronchoscope, Dr. Myerson had been fortunate. The internists at Mount Sinai Hospital had found, as had those with whom Dr. Myerson was associated, that a large percentage of cases of lung abscess get well spontaneously, and they also realized that bronchoscopy would help them get well quicker, as Dr. Myerson had brought out. In the report made a few days before at the American Laryngological, Rhinological and Otological Society in Atlantic City by Philadelphia men working with Dr. Chevalier Jackson, they reported 25 per cent of the cases of lung abscess of less than three months duration cured with bronchoscopy; the percentage in the older cases was less. That corresponded with Dr. Myerson's statistics, as well as with Dr. Yankauer's own experience, the earlier cases can be cured with fewer treatments than those that are older and have become fibrotic. Dr. Yankauer said he was inclined to think that in cases of many years duration, where the abscess cavity is surrounded by firm fibrous tissue, bronchoscopy can never cure them but that they must be operated upon.

There is such a variety of these chronic conditions, however, that no one method of treatment will ever cure them all. Some will get well with bronchoscopy, and it is surprising how rapidly they improve under such treatment. In one instance a lung abscess of a year's duration, in which the patient had been running a temperature of 102 to 104,° by the second bronchoscopy the patient was relieved of a large amount of pus, and immediately the temperature improved; although the patient is not yet cured, the improvement is continuous. This was a case of a year's duration.

Dr. Yankauer said that in his own series of 150 cases, about 1 out of 7 were cured, and these were all old cases; about 70 per cent were so far improved that the patients were able to earn their living. A few cases died of acute exacerbation during this time, and a number were subjected to operation, of which group some were cured and others died.

The bronchoscope offers a help in these cases, and the young man who had just been presented was an instance. He had had a splendid position in a banking house, but had to leave it because his fellow workers could not endure the odor. He then took up this treatment. Although he is not yet cured, he is as nearly so as he ever will be, and is in very good condition, and is back at work.